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EARTHENWARE

OF THE

NEW YORK ABORIGINES

PREPARED BY

WILLIAM M. BEAUCHAMP, S. T. D.

ALBANY

UNIVERSITY OF THE STATE OF NEW YORK

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INTRODUCTION

The reception accorded the archeologic bulletins already issued is most gratifying to all concerned. Since their inception there have been bought and placed on exhibition in the corridors of the state capitol and in the state library several collections, including articles of much more than a commercial value gathered in their respective fields by enthusiasts in local work. They will be sought and studied by many interested in early New York history. Besides those which are the results of field work, the state is fortunate in its collection of Indian silver brooches, and of the grotesque wooden masks, still used by the Iroquois yet living among us. It is yet more fortunate in having the University appointed keeper of the wampums for the Six Nations of New York. In this way only was it possible to obtain and to save from swift destruction the unique wampum belts now on exhibition, the widest on record.

It was greatly desired that the Rev. W: M. Beauchamp who prepared the present and the preceding bulletins, should give his whole time to the preparation of others while there was opportunity, but the moderate means provided allowed but moderate work, and there must be a waiting for results which might be secured now. Three important subjects, however, have been covered in this preliminary way. Should the series be carried on as hoped, there will come one interruption not unwelcome to many, in preparing an archeologic map of New York, which it has been decided shall constitute the next bulletin. The regular bulletin size will admit less detail than is desirable. Some of the 60 counties have scores of sites, earthworks, hamlets and camps; but not much can be said on each of these for lack of room. Other counties, however, have little of interest, allowing more space. The many plans of forts which have been secured, will probably be made a separate subject. While Dr Beauchamp has a large amount of material ready for this work, he desires the fullest that may be procured, and will be grateful, in the interests of science and the state, for any information from any source. This should be sent as soon as may be convenient, addressed Rev. W: M. Beauchamp, Baldwinsville, N. Y. What is not directly used now will be reserved for future needs.

MELVIL DEWEY

Secretary of the University

EARTHENWARE OF THE NEW YORK ABORIGINES

The art of making vessels or ornaments of baked clay dates from a remote antiquity. The material is so easily molded that it was probably used without baking at an even earlier day. Sun-dried bricks and vessels are frequent in lands where they could advantageously be employed, and the great advantage of burning these may have been accidentally discovered in many places far apart. Without discussing this history, it may be observed that a strong resemblance has been noted between the rude pottery of this part of our land and the early ware of Scandinavian, Celtic and Teutonic peoples. Not alone does this appear in general form, material and ornament, but in the remarkable feature of the dark hue within and the comparative brightness of the exterior.

In aboriginal New York earthenware we can make but three great divisions, the third of which is of small importance. First are those useful vessels whose fragments abound in many fields, but which are now so rare in their complete form. Then we have that remarkable class which gives us our best ideas of aboriginal plastic art, and sometimes even more, the bold or graceful pipes which the natives smoked in days of peace. The third class includes articles of a miscellaneous character, ornamental or useful, as well as some employed in games. These are few in number, and yet have importance in a limited way.

As a rule, vessels of stone or of bark preceded earthenware in New York, the latter being in general use only in recent times. Those of bark have left no trace, but we may sometimes infer their use on sites where nothing else is to be found. Potstone or steatite is not rare in many places, but is usually absent from those where earthenware occurs. The latter was universal among the Iroquois family, and was largely employed by many of the Algonquins.

Going yet farther north we find that the Eskimos still use potstone vessels, much like those whose fragments are found beside our

rivers. They have never acquired the art of making earthen pottery, nor have the wandering tribes in the north of Canada ever done so. In fact, the Canadian Indians do not appear to have used earthenware in early days, with the exception of the allied Hurons and Petuns, the Neutrals and the Iroquois of the St Lawrence, all of these being of one family. At Hochelaga or Montreal, the primitive Mohawks made the same types of vessels and pipes before their flight, that they afterwards did in New York. Similar forms appear in the earthworks north of the St Lawrence, and not far from Prescott. The nomadic tribes, however, preferred vessels of bark, easily carried but not easily broken. In these they heated water with hot stones, as the Iroquois may sometimes have done. Mr Frank H. Cushing suggests that the angular forms of many Iroquois vessels may have come from the bark originals of their earlier days. Even now they make many large and convenient vessels of bark, which may be seen in their New York homes.

In his paper on *Ancient pottery of the Mississippi valley*, Mr W. H. Holmes easily distinguished three great groups in the region lying around that river, with earthenware differing in form and ornaments. In speaking of these groups he said, 'The ware of the north is wholly distinct, and need never be confounded with the other groups.' In that valley he placed this group from Iowa inclusive, northward. He said also, and our experience confirms this, that the pottery of Manitoba 'has decided relationships with the ware of the eastern and northeastern states.' The nations in this northern group made a dark paste, tempered with sand, often granitic, and the forms were simple, the ornaments being unlike those of the south. This ornamentation 'consists of cord impressions, incised lines, and implement indentations, arranged in figures peculiar to the district.' This is so marked as to suggest a community of origin. In the paper mentioned, a vessel from Wisconsin is like frequent forms in New York. Pottery found in Pennsylvania and New Jersey has similar forms and ornaments of the simpler kinds, and this is true of a few examples farther south. Even the Pueblos afford fragments with the incised lines and patterns found here, but these are not the prevailing style.

The fineness of the work may depend much on the material, and this varies greatly. That of the southwest is usually finer than in New York, but in many cases here this was selected with care. Mr S. L. Frey, writing in 1885 of an early Mohawk fort in Fulton county, said, 'The pits from which the clay was taken are at the foot of the hill on which the village stood; they are abundant all along a little stream that trickles over the huge boulders and logs, and through a tangle of ferns and wild growths of all kinds. The holes were sunk through the upper soil to a bed of stiff, tenacious clay, which overlies the Utica slate at that point.' We recall no other place where such pits have been observed, but very fine clay was used for many vessels and pipes, some of which have a surface which seems almost polished. The material itself was carefully prepared.

In both pipes and vessels may be found frequent means of identifying or connecting one place or age with another, and we give a simple illustration. Figures of some New York pipes were sent to Mr Francis Parkman in 1884, on account of his mere description of the Huron pipes of Canada. In reply he said, 'Two or three of these have almost exact counterparts in the pipes of Hochelaga, preserved in the museum of McGill college at Montreal. Some I very carelessly mentioned as stemless, because they had a short stem of their own, and did not need a long wooden one.'

In this case the pipes simply confirmed history, the Hurons, the Hochelagans and the New York Iroquois all belonging to the same family. If a village had been isolated or unknown to history, the evidence of the pipes would have been important. That of pottery has proved even more valuable in New York, clearly establishing the connection and relative age of some sites.

Much has been written on the making and ornamentation of aboriginal American pottery in all parts of the land, but we are now concerned only with our local ware. The ruder forms were probably molded by the hands alone, aided by simple implements, and some of the finer examples were made in the same way. Others seem to have been formed on some kind of foundation, in part at least, and a prevalent idea has been that many were formed within

baskets, which disappeared in the burning. This was mistaking the theory. Prof. Wyman, in speaking of the cord-marked pottery of Tennessee, said, 'It seems incredible that even an Indian would be so prodigal of time and labor as to make the necessary quantity of well-twisted thread, and weave it into shape for the mere purpose of serving as a mold, which must be destroyed in making a single copy.' To this Mr Holmes replied that the nets were removed before burning or drying; adding that in the case of the great salt vessels of the Saline river, Ill., the fabrics were applied after the vessels were formed. That these were salt kettles is assumed by many, but it remains true that the early historic nations of the northern United States and of Canada used no salt at all. Cords were employed in decorating early earthenware in Great Britain, and the process has been clearly proved in the United States, though less general than has been claimed.

Some stamps were certainly used in adorning much northern pottery, as the impression is very uniform. Corn on the cob has been suggested as one means, and probably other seeds were employed in a few cases. Patterns may have been stitched on birch bark and applied to the surface. Sharp and round pointed tools had their use, either simply cutting or else excavating the soft clay. Besides the grooves or cuts there are usually slightly raised lines caused by pressure, but these do not always appear. Hollow bone was useful, and many a bold rim was pinched between the thumb and finger, or incised by the long and sharp nails of the Iroquois, which they kept in this condition with a double purpose, that of mangling their captives when tortured, and to show that they did not labor themselves. Rarely did they have an industrial use.

One primitive process in forming earthen vessels was building up, often with a long coil of clay, afterwards smoothed, polished and decorated when desired. Large crucibles are still made in this way in some modern manufactories. The coiled and simply decorated ware of the Zunis is well known, and there are rare suggestions of this here. In decoration animal forms are mostly confined to pipes in New York, but the human face and form often appear on earthen Iroquois vessels, early in the 17th century and late in the

16th. It was in vogue for nearly 50 years, and might have led to something higher had it not been displaced by the white man's wares.

Early writers are not agreed on some points. Roger Williams, one of our earliest and best authorities on New England aboriginal life, said that 'the women made all the earthen vessels.' Daniel Gookin wrote, in 1674, of the fragile clay vessels there, saying that 'the clay and the earth they were made of were very scarce and dear. The dishes, pots and spoons are the manufacture of the men.' This showed careful selection of material, whether the men were really the artisans or not. Hutchinson said that the Narragansetts 'furnished the earthen vessels and pots for cookery and other domestic uses.' Such wares were often articles of commerce, when they gained a reputation.

The Iroquois did not make stone pipes when first known, unless rarely, the clay pipe being then in use throughout the various nations of that large family, but for official purposes stone calumets appear quite early. Megapolensis said, about 1650, that each of the Mohawks had 'a long tobacco pipe, made by himself, in his mouth.' Capt. George Weymouth, who visited Long Island in 1605, said 'The heads of their tobacco pipes were sometimes made of clay, and sometimes were only the claw of a lobster; but they were all sufficient to hold as much as 10 or 12 of ours.' Henry Hudson observed among the River Indians, however, 'copper tobacco pipes and pots of earth to cook their meat in.' He mentioned also copper ornaments and pipes in New Jersey, perhaps mistaking the bronze red hue of the clay for the metal.

There are occasional ornaments and other articles of burned clay, but these are rare. Quite rarely, too, inclosures of clay appear in sepulture. An example of this was found on the east side of Canandaigua lake in July 1893, and in a sandy soil. Three skeletons were found near together, one of which was large and had the limbs drawn up in the usual way. Excepting the ribs the bones were sound. Mr E. J. Durant writes, 'They were lying in a stratum of hard burned clay; so hard that it came up in chunks when broken. Plenty of charcoal was in this stratum. Near the skele-

tons a fireplace was found. This was a hollow in the ground, lined with burned clay, and filled with charcoal.' Another observer described the fireplace as circular and like a deep bowl, 3 feet across. The baked clay was 4 inches thick, and the charcoal about the same. This rare instance of one use of clay here hardly forms a part of our subject now, but is worthy of note. In the west it is more frequent.

Refuse heaps, by village sites, usually contain a great deal of broken earthenware, out of which fine or curious fragments are often taken, and these occur also in the ash beds of the old fireplaces. This is so on some quite recent sites, for while the richer Iroquois obtained brass kettles quickly from the whites, their poorer friends continued the primitive art till the beginning of the 18th century at least. In some places rude pottery is found at a considerable depth, from different causes. In fireplaces this may come from the practice of placing the fire in excavations in the ground. On village sites, also, the same difference will be observed in material, style and finish, as in other articles. Taste, skill and the ability to buy, did not belong to all. The fact that the distinctions of rich and poor are found in savage life is never to be overlooked in the study of aboriginal articles, if we would avoid serious mistakes.

The difference in the forms of eastern pottery when compared with those of the south, has been mentioned. The long-necked vessels of the middle Mississippi valley are never seen in the northern states, nor are depressed vessels often found in eastern earthenware, although frequent in soapstone. Usually the base is rounded, and the swelling sides are constricted below the top, thus giving an expanded rim of various forms. Sometimes the margin is horizontal, but is more commonly angular, with two or more elevations. In section the rim may be angular, circular or elliptic, and is often perfectly straight, or very nearly so, in portions of the circumference. The rim may be simple and narrow, or deep and broadly projecting. It is usually much ornamented outside, often on the top as well, but more rarely within. In a few cases, however, the interior ornamentation is elaborate and deep. As a rule there is little detail below the expanded top.

The inside is commonly black, and the outside of the proper hue of baked clay, varying much according to the material. Means of suspension rarely appear, but a cross piece of wood within, attached to a cord, may have afforded these. Except in cooking an outside cord would have sufficed, but there are no signs of wear from this. How much and how they were used in cooking may be a question. They could have been placed on a fire of coals rather than over it, but show few external signs of such use, the outer surface being usually clean and bright. The blackened interior suggests the placing of hot stones in the water, so common a device among our northern aborigines. Many were probably used merely for holding water, or sometimes grain. Some large vessels were quite thin, and few were adapted for hard usage. There are some which are very small, apparently made on the thumb, and there are occasional examples of toy vessels, about an inch in diameter and neatly finished. These are the shallowest forms of all, and having at times a raised and perforated ear may have been an imitation of the brass kettle. Some of these, however, are from a Mohawk site which seems to have been occupied as early as the end of the 16th century. Very small vessels occur on another site of the same period. In the Toronto collection is a small vessel made on the thumb, and retaining an impression of the thumb nail. This is rude, and the best examples of these small forms are those of the Mohawks.

True Iroquois vessels, with the usual constriction below the deep expanded and ornamented rim, appear in some Canadian earthworks a few miles northwest of Prescott. Figures of these were given in the Smithsonian report for 1856, and they are from 4 to $8\frac{3}{4}$ inches in inside diameter. Clay disks also occur there, about the size of a quarter of a dollar. These are also found on Iroquois sites in New York, but of a larger size. Perforated specimens come from Huron sites in Canada, and similar disks have often been found at Hochelaga or Montreal. They are usually of secondary use, chipped out of earthenware fragments.

The earthen vessels found on the site of Hochelaga at Montreal, in 1861, held from 1 quart to 4 gallons. Sir J. W. Dawson

thought they were ornamented with 'a pointed instrument, with rings made with a stamp, and with impressions of the finger point and nail around the edge.' He points to the practice of pastry cooks for modern examples, and adds that 'Fragments of pottery from a long barrow near West Kennet, in Wiltshire, figured by Lubbock, are remarkably near to a common Hochelagan pattern, and finger prints as an ornament occur on vessels from the pile villages of the Lake of Zurich.' A raised pattern is occasional in Canada and New York, and of this he says, 'One evidently represents the rows of grain in the ear of Indian corn, and may be called the corn ear pattern.' A second class he called 'the basket and bead pattern,' which he thought imitated woven baskets ornamented with beads. In this he distinguished the 'chevron and saltier patterns.' A rude basket pattern appears in some rude early British pottery. To these he added a third pattern of network, found on the round bottoms of some large vessels. This sometimes appears on the sides of New York pottery, and may come from matting.

In a letter to the writer regarding the human faces on the outside of some New York pottery, he said that nothing of the kind appeared on Hochelagan vessels, 'unless three rings, two above and one below, may be taken to represent eyes and a mouth. Perforated clay disks are common.' The pipes and vessels which he figured in *Fossil men* are like those of New York, and detached heads occur here sparingly, as well as the three rings.

A few years since Dr D. S. Kellogg, of Plattsburg, had obtained parts of rims of over 800 different vessels along the west shore of Lake Champlain. These rims were circular or elliptic, and often indented or scalloped along the edge. These vessels were often ornamented from the top nearly to the bottom, and sometimes on the inner surface. The bottoms were plain and never flat, and they varied in capacity from 3 to 8 quarts. None had any representations of animals, or of the human face or figure. In his *History of St Lawrence county*, Mr Hough said that on some fragments of pottery a rude resemblance to a human face is seen. He may have referred to the three rings or indentations found elsewhere near the St Lawrence river. An example of this comes from Springfield, Ohio, closely resembling New York pottery.

Soapstone is common in the New England states, and Mr John J. Alton said, in writing of its ancient inhabitants, 'I have never seen a fragment of baked clay pottery made by these Indians.' This is merely negative testimony, for it is found there in some places, and early writers mention its use and manufacture. In *Gosnold's voyages* it is said of the Indians of Marthas Vineyard, that 'the necks of their pipes are made of clay hard dried, (whereof in the island is great store, both red and white) the other part is a piece of hollow copper, very finely closed and cemented together.' The references to pipes with copper bowls are certainly curious, and there can be no doubt of the occasional use of copper in other ways.

The pottery in some parts of Ohio closely resembles that of New York, and this remark also applies to some earthworks as well. The natural conclusion, confirmed by early maps, is that the Iroquois family held all the country on the south shore of Lake Erie 300 years ago. It is every way probable that nearly all of Ohio was then in the possession of the Eries and their kindred. The inland homes of the former are mentioned in the *Relation* of 1648. 'This lake, named Erie, was formerly inhabited on its southern shores by certain peoples whom we call the nation of the Cat; who have been obliged to withdraw into the lands in order to get away from their enemies, who are more towards the west. These people of the Cat have a number of fixed villages, for they cultivate the ground, and are of the same language as our Hurons.'

Some of the usual types of clay vessels ornamented like those of the Iroquois, have been found in New York city, near the Harlem river, by Messrs Chenoweth, Calver and others. Some of these are quite large. The largest vessel found in 1890 was 2 feet high and 18 inches in diameter, while others were nearly as large. On the other hand, some fragments were very coarse in every way, and had local peculiarities.

Mr W. W. Tooker, of Sag Harbor, said of the earthenware of Long Island, 'It is found wherever we find traces of the Indian's footsteps. Much of it is ornamented by cords, incised lines, by the impression of the thumb, by the finger nail, and in other ways.' He restored one large vessel out of 184 pieces, and found two smaller

ones in a grave. These showed basket work. While clay pipes were rare on Long Island, the stems were often found.

West of the Hudson river fragmentary pottery occurs on most important sites. In his *Reminiscences of Saratoga*, 1880, Mr W. L. Stone spoke of the remains of an old Indian pottery kiln, 'within the cavities of which are yet found sun dried and fire baked vases, covered with quaint ornamentation.' This was on the south side of Fish creek, but may have been one of the refuse heaps often mistaken for kilns. Pottery is frequent there.

Dr C. C. Abbott found similar pottery plentiful in many parts of New Jersey, and it seems of general distribution through the northern states and much of Canada.

A fragment of a jar with an open projecting ear or handle has come to our attention in Canada, and one from the country of the Neutrals has an upward projection on one side of the flat rim, probably meant for a handle. Vessels with raised and corrugated bars occur there also, identical with New York specimens of the early part of the 17th century. This is Dawson's corn ear pattern. The flaring angle at one end, suggestive of a pitcher, appears on a well ornamented Canadian vessel, $4\frac{3}{4}$ inches across, and has its counterpart in New York. So many Hurons were adopted by the Iroquois that these national or local forms in vessels and pipes would be expected here at the period of the Huron downfall, even as we find them. Simply as members of one great family there would be strong resemblances.

Thus there is in the Toronto collection a peculiar Huron pipe, with characteristic human head and arms, which is frequent in New York only on Seneca sites, where an entire town was formed of Huron captives. Those with entwining serpents and with a snake-head bowl, are common to both regions. The spiral stem found among the Senecas was occasional among the Hurons, and corded bowls and bird pipes belong to Huron and Iroquois alike. The bold and remarkable pipes of Jefferson county, with a large human face before and behind the bowl, are also found in Canada. Owl pipes were made by the Petuns and by the Oneidas, and the long stems, with lines and elliptic indentations were everywhere popular.

In another material, a stone pipe from Lake Moira, Canada, closely resembles a slender and peculiar clay pipe from Brewerton, N. Y., the very slender stem projecting at but a slight angle from the bowl.

A long bowled pipe, with a thin flaring edge, and horizontal groove in front, has been found in Vermont, and is a frequent New York form. Clay pipes are rare east of Lake Champlain, but some would be expected there, as it was an early Iroquois hunting ground, and their war parties frequently traversed the lake, but usually on the western side. In fact wherever they went the early Iroquois carried some articles of clay. They possibly gained something from captives, but their distinctive achievement at about the end of the 16th century, and during a score or more of years afterwards, was the decoration of the angles of vessels with human faces or figures. About the same time the Onondagas added to these a few curious and unique pipes.

For many years we have made a careful record and comparison of even the ornamented fragments of pottery, placing side by side those from different sites. While there may be a general agreement there will often be suggestive differences, sufficient to show a difference in the people or age. At the same time there may appear a close correspondence in certain unusual ornaments, revealing a close relationship in places far apart. We look for these resemblances and differences in more striking articles or features, but the simple lines, dots and indentations of New York pottery may help us much.

While giving a sufficient number of typical forms of vessels, necessarily much reduced, much attention will be paid to mere ornament in this paper. Representative specimens have been selected from thousands of examples, unique or common, which will give a fair idea of this feature of aboriginal art. Within the proposed limits it can only be representative, but it may lead many to a study which has been too much neglected, and bring about valuable results. In preliminary work of this kind it will happen that some features of interest will not appear, either because unknown or inaccessible. The reader who observes the omission will then understand just

what he should report to make our knowledge more complete. Perfect examples of New York aboriginal pottery are specially desired for the state museum, but fragments showing unusual styles of ornament will also be of value and interest. It should always be stated where they were found. In fact articles without a record are shorn of half their value, and become mere curios in many cases. With a good record a simple relic may solve some riddle of history, or bring out truths unsuspected before. This should never be forgotten.

In the general treatment of this subject a word may be said on the antiquity of earthenware in New York. The most careful comparative work has been done between the Hudson river and Lake Erie, and little pottery has been found there to which an age of much over 500 years can be safely ascribed, unless it may be on small hunting camps. The noted double walled fort in Shelby, to which a great antiquity has been given, probably falls far within that limit. With the exception of a pair of Ohio shells, not an article has been found upon it which can not be duplicated on historic Iroquois sites of early days, and this is notably true in earthenware. Many of the earthworks of Jefferson county may be allowed an age of five centuries, though probably more recent, and all are prehistoric in a sense, but some certainly show a knowledge of the white man's arts.

In Chautauqua and Cattaraugus counties the case may prove different. These formed a border land, and while earthenware is abundant there, little has been definitely described. Towards Lake Erie the earthworks were quite recent, and those farther inland are of the ordinary Iroquois type. In these two counties are upwards of 50 defensive works, and the region seems an early center of Iroquois life. A careful study of its pottery might show how closely related this was to other places and later days.

It must be remembered that nations of the Iroquois family occupied northwestern Pennsylvania 300 years ago, as well as the banks of the Susquehanna and partially those of the Delaware. The Andastes of the French, who were the Minquas of the Dutch, were of this powerful family, and waged a fierce warfare against the

Five Nations of New York. The Massawomekes of Capt. John Smith, so dreaded on Chesapeake bay, were probably a southern offshoot of the Eries, so that along the principal rivers of Pennsylvania, somewhat remote from the sea, we may expect to find pottery closely resembling that of this state. In river valleys, however, subject to inundation, any flood may expose or bury still deeper objects of this kind. Their age can not safely be predicated from their depth in the soil. The fairest chronological evidence will come from village sites, and these give no great age to earthenware in New York, while that age is an open question still.

The question of age and probable population is affected by another circumstance. Early Iroquois villages were removed every 10 or 15 years, and a liberal allowance of time would give six or more removals in a century. A dozen sites, and often many more, would thus be required in 200 years for a single village. The Mohawks had from three to four or more towns at a time, and the Senecas never less than four. The latter would thus occupy and abandon nearly or quite 50 places in two centuries. It is thus obvious that for any long period of continuous occupation we must reduce the population to a very small number. On the other hand, if we allow a moderate strength to any people we reduce the time of occupation. When this fact is understood, and the true relationship of the site known, we arrive at a safe basis for estimating the length of time in which much of New York was really occupied as a home by the aborigines. Without discussing the subject farther, attention is called to these facts, for they greatly affect a clear conception of prehistoric times, and their relations to later days. Chronologically most of the articles here described belong to the 17th century, and the larger part of the rest apparently to the 16th.

Most of the first class of illustrations here given are of fragments of vessels, selected out of a large number to show patterns used in ornamenting. All these are of actual size, and being fragmentary there is no need of giving dimensions. Fig. 1 is a rim from Jefferson county, where the style of ornament is often both bold and rich. The vessel must have been quite handsome, as the ornamentation was continued down the sides, below the projecting rim,

which is decorated above and within. The curve of the rim and side is very bold, sweeping suddenly outward from the narrow top and almost as abruptly contracting again, to expand once more. A few others have curves almost as well rounded as this, but usually in thinner vessels. On the upper projection are horizontal lines and those sloping both ways. Below is a row of elliptic indentations, and a series of curved and sloping lines. It is remarkable for its wide and almost marginal projection, though a smaller expansion is not rare.

Another rim from Jefferson county has elliptic indentations arranged in curved lines. Fig. 2 has a series of short curved grooves arranged in horizontal lines, and the outer edge of the rim has notches. This comes from an early stockade on the north bank of the Seneca river, where fragmentary pottery is abundant. Fig. 3 has horizontal grooves in which are regular indentations. The grooves are quite broad. Below these are somewhat similar grooves, shorter, sloping in opposite directions, and almost meeting at angles. This frequent pattern is from the Seneca river. A rim ornamented on top has similar broad sloping grooves, and below these are several interrupted grooves which are nearly horizontal. From the same site as the last.

Fig. 4 is a very handsome fragment, which has a curious double curve, suggesting a singular form of vessel. It is moderately thick. There are indented grooves, both horizontal and sloping, and a horizontal line of large circular indentations. The work is quite elaborate and very neatly done; this was found with the last two. Another with these has a straight rim, showing but a little curve to that part of the vessel. This is a frequent feature, so that it must have been somewhat angular. Outside there is a slight projection, less than an inch below the top, sloping back above, so that there is but a slight thickness at the actual rim. There are waved lines below the projection, which are quite shallow and irregular. This simple rim is not common.

Fig. 5. A very plain rim without projection, from the same place. There are very irregular grooves, following no apparent pattern. It is somewhat remarkable in this way. Fig. 6 has deeply incised

horizontal grooves, expanding and contracting, and thus showing a double undulation. This is from the same place. Fig. 7 comes from the same site. There is a plain rim with graceful undulations on top. The horizontal grooves have indentations, and there are cross grooves between these and of the same kind. This fragment suggests an elaborately decorated vessel. Fig. 8 is quite like the last, and from the same place. The undulations above, however, have each three narrow grooves, parallel with the rim, and all the indented grooves slope and cross each other, forming a network of diamonds. It is much thicker than the last.

Fig. 9 is a rare ornamental fragment from the same prolific site on the south bank of the Seneca river. The horizontal groove is broad, deep and obscurely interrupted. Below this are broad sloping grooves, distinctly divided by very sharp and narrow walls. The indentations are deepest and walls sharpest on one side, the divisions rounding and sloping on the other. This may not have been invariable throughout. There are forms approaching this. It is interesting to observe how many styles may be found on one spot.

Fig. 10 is from a fort north of the Seneca river. It is a rim placed at an angle in the plate, the long and straight side being the top. All the indented lines thus actually slope. Part of the divisions in the grooves are angular, and part are slightly rounded. Both these styles of indented grooves are frequent, but not in combination. Fig. 11 is a simple zig-zag pattern of small and shallow circular indentations, from the mouth of Dead creek, on the south shore of Seneca river. These small dots often appear, but rarely thus arranged.

Fig. 12 is a fine and rare rim from Baldwinsville. It has cross grooves above, sloping first in one direction and then in the other below. These are short. Other short diagonal grooves are below these. The fragment is ornamented within. Other fragments of the same vessel are quite different in design, having many elliptic indentations and waving lines. It is not safe to say how a vessel is ornamented throughout from seeing one fragment.

Fig. 13 is from a circular stockade two miles south of the Seneca river. It is a notched and projecting rim, with two narrow parallel grooves above. The projection is rather thin, and below this, all is plain. Fig. 14 is a rim from a stockade on the north side of Seneca river. The rim is simple, and is angularly undulated on top. Below are grooves, both horizontal and sloping. In a plain space inclosed by these, are several long triangular indentations. A basal groove indicates a slight projection.

Fig. 15 is a fine rim from Jefferson county. There are deep sloping notches at the edge, above three broad horizontal grooves. Below these are curved and sloping grooves on one side. On the other are two large indentations above, and several triangular ones below. Then come two horizontal grooves, and a line of deep diamond indentations on the base of the projection. Below this it seems to have been perfectly plain.

Fig. 16 is a handsome rim from Onondaga lake, curving gracefully to the lower part. There are both diagonal and horizontal lines, angularly indented and quite closely arranged. The rim has lines on top, and the whole piece is thin and much curved. Fig. 17 is perfectly straight-sided within. Outside there is a slight projection of the upper part. On the upper part of the fragment, which does not include the rim, though it may nearly have reached it, are shallow and vertical grooves. The indentations at the edge of the projection were formed by pinching the clay between the thumb and finger. This style of ornamenting will frequently be found. The fragment is from a stockade two miles south of the Seneca river. The vessel must have been large or angular, although not thick.

Fig. 18 is a fragment from a stockade on the north bank of the Seneca river. The decoration remaining is a row of large and deep triangles which are not equilateral. All become deeper from the long side to the broad angle. They were made by the inclined pressure of some broad and straight edged implement. Fig. 19, from the Seneca river, is a very fine rim, the upper part of which has a broad and even slope. This has rows of diamond indentations, narrowly divided in the rows. Below the projection are two hori-

zontal rows of diamond indentations, narrowly divided as before. Simple horizontal grooves appear below these.

Fig. 20 has horizontal and vertical lines of oblong angular indentations. The divisions in the lines are narrow, and it comes from the Seneca river. Fig. 21 is a fragment from an early hamlet on another part of Seneca river, and is unique in arrangement and character. Above the usual projection are four short and curved parallel grooves, repeated in a horizontal series. Each series of four is about an inch long, and there are less distinct curved lines below.

Fig. 22 is another fine rim from Fabius, in Onondaga county. The surface is quite flat from the upper edge to the customary projection below, where the deep notches are intersected by the slightly sloping grooves. Below the top are regular diagonal grooves, very neat in detail and about an inch long. Both horizontal and sloping lines appear below these, and in a long open space between them is a row of indented rings, probably made with a hollow bone tool. The general character of the fragment is that of much pottery in Jefferson county, whence many of the early Onondagas may have come. The rings are large and neatly made. Bone implements, suitable for such work, are found on neighboring sites.

Fig. 23 is from Jefferson county. In the fragment there are three horizontal grooves above, with narrow rectangular divisions. There may have been more than these. Below are three similar grooves on each side, the groups sloping in opposite directions. The divisions in these grooves are more rounded than in those above, and resemble a form of what is sometimes called a corn pattern. In the angular spaces inclosed are lines of moderately large circular indentations. All these ornaments are quite widespread. Very little Jefferson county pottery is accurately located, although this is often a matter of importance.

Fig. 24 is a fragment of fine material and neat workmanship, from Onondaga lake, where pottery is quite rare on nearly all sites, showing that it had little Iroquois occupation in early days. The pattern is of small indented circles or dots, arranged in lines, of which some are parallel and others meet at acute angles. Fig. 25 is a neat and thin rim, very slightly thickened at the top. Beneath this slight

expansion is a row of small sloping and elliptic indentations, with nearly horizontal grooves beneath, irregularly arranged. These grooves are not continuous, ending abruptly or tapering to a top, and they have angular divisions. The rim is from the same place as the last. Fig. 26 has a curious and unusual pattern, formed by small triangular indentations arranged in curved lines. The long side of each of these is convex, and the others concave. The indentations cause the intermediate lines to seem raised. This is from the Seneca river.

Fig. 27 is a large and finely ornamented fragment from Oneida lake, evidently part of a very large vessel. The pattern is arranged in broad converging bands, and is such as might be used in bead-work on the front of a moccasin. Each broad band is edged with lines of circular indentations, and similar diagonal lines appear across from side to side. The intermediate plain spaces are nearly as wide as these decorations. Fig. 28 is a rim of very common design. There is no great expansion above, but half circular notches appear in the edge, and lower down are both horizontal and diagonal grooves. Rims are often thus notched, but in very many ways, sometimes merely with a knife or the finger nail. This piece is from an Onondaga village occupied about 1670. It may be said that while the richer Indians soon afforded brass kettles, poorer families long continued to make the old earthenware.

Fig. 29 introduces us to a class of ornament quite prevalent from about 1590, or possibly a little earlier, to about 1630, when it completely disappeared. It was the highest achievement of the Iroquois in decorated ware, nor was it found among all of them, the three Elder Brothers, the Mohawks, Onondagas and Senecas alone using it as far as yet known. None has been reported from the Oneida and Cayuga territory, and but little from the Seneca. Its comparative abundance among the Mohawks and Onondagas lends strength to the traditional early intimate relations between these two nations, through Hiawatha and Dekanawida, both reputedly Onondagas by birth, and Mohawks by adoption. In this ornamentation the face or form was molded separately, and then luted on before burning. In consequence the faces are often found de-

tached, or the impressions of the limbs remain when these are gone. The Onondagas reached a higher development in this art than the Mohawks, and many faces have such an individual character, as regards age and expression, that they seem portraits. Two of those grouped here have this individuality. They were often, but not always, placed at an elevated angle of the rim. This is the case in this figure, where a grotesque face appears just below the notched angle. There is a suggestion here of a curved neck, possibly united to a body, but the face may have appeared alone. The fragment is from a stockade in southern Onondaga, occupied perhaps about 1620.

Fig. 30 is another fine face from the same site, a little south of Delphi. It is surrounded with diagonal grooves on the surface of the vessel, and has marked individuality. Fig. 31 is another face of characteristic Indian type, appearing on a plain surface. It is from a stockade west of Cazenovia, occupied by the Onondagas about 1600. These large faces are frequent there, and on neighboring sites.

Fig. 32 is a fine rim of unusual character from the site south of Delphi. There are three neat horizontal grooves above the usual projection, which is formed by deep and graceful curves, edged on the concave part with large elliptic indentations. The design is bold and well carried out. Fig. 33 is from a stockade near Baldwinsville. The figure is simple, pretty and unusual. A row of small circular indentations has rows of elliptic and pointed vertical indentations above and below. Fig. 34 is a rim from a stockade on the south side of Seneca river. The expanded top is deeply notched on both sides, and is somewhat undulated above. Fig. 35 comes from a stockade opposite the last, and north of the river. It is a plain rim, coming to a point above, ornamented just below the top with a row of narrow and diagonal ellipses, beneath which are narrow, irregular and interrupted grooves.

Fig. 36 is part of a rim found east of Wagner's hollow, Montgomery county. The narrow top is undulating, and the sharp grooves are crossed by a horizontal groove near the top. The angular ends of the grooves are sharply defined. The fragment

is larger than here represented, and the deep notches at the basal projection are here omitted. This elevated site has some remarkable earthenware, mixed with European articles. Fig. 37 is a neat rim from a stockade west of Baldwinsville. A row of elliptic indentations is arranged diagonally above, where the rim curves over to the inner line of the vessel. Below this the deep grooves are separated by ridges crossed by spiral lines.

Fig. 38 is a fine and rare piece from Brewerton, angular above, and with diagonal zig-zag grooves on the narrow projection above. Below these and under the projection are broad diagonal grooves, broken by cross indentations. Similar narrow grooves appear below, and a handsome decoration is suggested below all. The same style of ornament is seen within. Fig. 39 merely shows the rim of a large fragment, the top of which has convex vertical projections above the side of the vessel. The side is adorned with the common grooves. This is from the recent site east of Wagner's hollow, Montgomery county. Fig. 40 is a thin and very curious notched rim from the same place. The general surface is plain, but at the rim there are long curved or elliptic indentations, interspersed with shorter ones. It is both simple and rude, as well as quite modern.

Fig. 41 is from the same place, and is the most remarkable human figure yet found on an earthenware vessel. One feature is that most of it was molded with the vessel instead of separately, but this does not apply to all parts. There are the usual cross bars on the body, but none appear on the limbs, which is a departure from the type, as in a later Seneca example. It is also the only one yet found which is not symmetrical in arrangement, one hand being raised in this, and the other turned down. The toes are very long. In this and some other fragments, the grooves back of the body suggest plumes, and the maker may have taken a hint from the winged angels and cherubs of the white man. There are other outside grooves variously arranged, with odd features at the basal projection. The face is inferior to those made separately, and there is a great contrast in the two arms. In another from this site, the face and body were molded with the vessel, the body having the

usual cross bars. There are no arms, and the legs are gone, but seem to have been carried out from the base of the rim, leaving an opening between them and the vessel. There are notches at the end of the projection, and grooved lines above. The nose is raised, and the eyes are small rings. Altogether it is an interesting fragment.

Fig. 42 shows part of a rim from the double walled fort south-east of Baldwinsville. Deep notches are cut in the edge of the rim, which is ornamented above and within. Fig. 43 is a rim from Rice's woods, a few miles north of Palatine Bridge, which is remarkable for the very great projection of the upper and ornamented part. It is probable that the plain bowl gradually curved out beyond this, as in other examples. A deep undulating groove runs from top to bottom at the angle, which is raised. Notches appear along the basal edge of the projection, with grooves above, and there is a line of pyriform indentations below the rim. The inside is ornamented. Pottery as bold in design as this does not appear farther west.

Fig. 44 is from the same spot, and thus far is unique. It is a very prominent human head on the boldly projecting angle of an earthen vessel, which seems to have been much ornamented. The cross bars on the retreating angle beneath are more ornamental than usual, and the broad face, with its wide and open mouth, is more suggestive of an ape than a man when seen full in front. Above the head it is broken, but may not have risen much higher. This was a recent village site where European articles are frequent. The lateral grooves again suggest plumes, and this feature is hardly rare in these relics of the Mohawks, who may have had it from the Dutch.

Fig. 45 is from the double walled fort near Baldwinsville. The horizontal grooves had their edges neatly smoothed, while the hollow part is divided by small cross indentations. With this was a fragment having a line of large elliptic indentations, above which are diagonal rows of fine lines placed side by side.

Small vessels are sometimes found which were apparently toys. Fig. 46 is a rude example from Brewerton, which is nearly oval, yet somewhat angular. The depth is $1\frac{3}{8}$, and the diameter $1\frac{3}{16}$.

inches. It is unornamented, and resembles some found on Huron sites in Canada. The Mohawks made neater ornamented articles of this kind, but they are everywhere rare.

Fig. 47 brings us again to the early Onondagas, being from the site of 1600, at the time when the Iroquois league was probably formed, and while Hiawatha lived there. The rim rises to an angle and near its edge are rows of elliptic indentations placed diagonally above the nearly horizontal grooves which come just below. The broad face is not as artistic as some, but is fairly good-natured, as was proper in the days of Hiawatha the Peacemaker. Some of these Onondaga faces are quite pleasant in expression. There are diagonal grooves on each side of this massive countenance, and the edge of the projection beneath has the notches which are so common a feature. Fig. 48 is another remarkable Mohawk rim from the site east of Wagner's hollow, where the potters were persons of ideas and skill. It has no great beauty, but the notches at the base of the projection are unusually large and deep. The horizontal irregular grooves cross the broad points left, as well as the plain surface above. Another rim much resembles this, but is crossed by diagonal lines on top. The side ornaments are horizontal and sloping grooves with very deep and long notches. In this, however, the projecting points have diagonal grooves, spreading a little as they descend. The fragment suggests the same maker, but hardly the same vessel.

Fig. 49 is a simple but neat, curved and projecting rim from the Onondaga site of 1600. These early sites will be occasionally referred to by their probable dates, the archeologic connection being such as to render these almost a matter of certainty, while the age of any article may be of importance. This pretty rim has two parallel lines on the top, and the edges are notched on both sides. Below these it is perfectly plain. The top is thickened, but the sides are thin and curving. Fig. 50 is a grotesque, good-natured face adhering to a plain surface. It comes from the same site, and is of the largest size, fairly representing one modern form of Onondaga countenance. Fig. 51 is a rim of thin black pottery from an Onondaga fort on the line of Fabius and Pompey, several miles

southwest of the last, and occupied but little later. A very few European articles are found there. At the elevated angle is a face, below which is a straight body, reaching to the basal projection. This is grooved across, as usual, and the remaining surface is furrowed with rude diagonal and horizontal grooves. The notched base of the ornamented portion projects beyond the general surface. Pottery from this site is blacker than is usual in Onondaga county, and often thin.

Fig. 52 is from the site west of Cazenovia, and, as well as the next, is from a photograph. They are probably about half the actual length, but preserve their relative proportions to each other. The face is very broad and characteristic, being much like that of some Onondaga Indians now. It is immediately under the narrowly projecting and notched rim. The surface has a few diagonal lines, and the basal projection is notched. Traces of ornamentation also appear far down on the expanding side. Fig. 53 is from the same site, and the face is an excellent representation of an old person, toothless and withered. Above the face and below the notched rim, are several neat grooves. Many faces might be given from this interesting site, the home of the Onondagas at the formation of the Iroquois league.

Fig. 54 is a very curious human figure on a highly elevated and projecting rim. It comes from the fort already mentioned, on the line of Fabius, and is very thin. There is a row of indentations just below the rim, and another at the base of the projection. Irregular sloping lines appear between. The face, which reaches the top, is grotesque. The slender body has angular arms, the hands being clasped below the abdomen. Two legs follow the retreating slope below the projection, and are irregularly barred. The cross bars on the body and arms are neater. Similar specimens of black clay often occur on this elevated site. It was a local fashion, as in the case of the large faces already described.

Fig. 55 is a very small and rude vessel from Brewerton, very shallow and but an inch across. Fig. 56 is a much neater and smaller one from the Wagner's hollow site, north of the Mohawk in Montgomery county. This pretty little cup, or miniature kettle,

has raised and perforated ears, as though for suspension, and is ornamented below. Such perforations are sometimes found in larger vessels, but the raised ears are lacking. These suggest the white man's kettle, and there are other Mohawk examples of these tiny and peculiar vessels. This is but $\frac{7}{8}$ of an inch across.

Fig. 57 is a notable rim from an early hamlet on the Seneca river. It is nearly straight, suggesting a very large vessel in every way. There is a slight and rude projection at the top, with cleanly cut diagonal grooves below this. The edges of the usual projection, farther down, have deep and broad indentations, formed by pinching the clay between the finger and thumb. These are quite irregular, as would be expected, and this mode of ornamenting was early used. Fig. 58 is a remarkably beautifully ornamented fragment from Baldwinsville, very much and rather curiously curved. There are broad bands of diagonal lines of small perforations. These perforations are not all alike, but are carefully arranged. Narrower bands of plain surface divide the ornamental portions. The color is black and red.

Fig. 59 is a curved rim, sharply notched on the edge. Below these notches are three horizontal grooves, which encompassed the vessel. Beneath these are diagonal grooves. The lower projection is formed of long and broad points, a little rounded at the ends and an inch apart. Such points are rarely seen, as they extend half an inch below the lower curve of the vessel. This is from the same site as fig. 57. If the curve was regular, the inside diameter of the vessel would have been 14 inches.

Fig. 60 is a frequent style of ornament, sometimes called the corn pattern, from the idea that the indentations were formed by rolling an ear of corn over the vessel, where desired. It is from the same place as the last. Fig. 61 is a neat rim from Jefferson county. It has horizontal lines of elliptic indentations, and sloping lines in a pretty waving pattern. Below these is a horizontal line with angular indentations, and large elliptic grooves are on the edge of the projection beneath. It is ornamented on top and within. A ruder specimen from the same county, is quite straight, with vertical lines of dots above an undulating groove. Below this,

on either side, are lines sloping toward the center, which is occupied by four vertical lines, three of which are connected by cross grooves, forming squares.

Fig. 62 shows the edge of a projection, where the hexagonal indentations are both large and deep. There are diagonal lines in opposite directions. Found at Baldwinsville, but rather common in various sizes. Fig. 63 is a fragment of bright red pottery from Seneca county. It is ornamented with hollow squares in curved lines. This is better than most there, it being usually quite coarse.

Fig. 64 is a very bold and angular projection from Jefferson county. It has diagonal lines in opposite directions, with large elliptic indentations at the base of the projection. Underneath this the deep curve makes a sudden sweep outwards. Fig. 65 is a rim with undulated edge, from Plattsburg. It has elaborate decorations, mostly of lines of circular, elliptic and angular indentations. Much pottery has been collected along the western shore of Lake Champlain, on the sites of camps and small hamlets, by Dr Kellogg, who has also restored many vessels. Fig. 66 is also from Plattsburg, and has a series of diagonal grooves arranged in horizontal groups. These grooves have each three indentations slightly divided.

Fig. 67 is a rim from Jefferson county, with grooves in various directions. There are large elliptic indentations below the projection. The striking peculiarity, however, is the central square, two angles of which are above and below. Within this are three elliptic indentations, arranged as though for eyes and mouth. These are more common in that county than elsewhere, and may be the pottery found along the St Lawrence with a rude resemblance to a human face, of which Mr Hough speaks. This came from Watertown. Fig. 68 is another similar rim from Jefferson county. It has a row of elliptic indentations below the top, and another below the projection. The grooves are much like the last, but in one space are three large elliptic indentations, one above another. The face, if it may be so called, is inclosed by five lines, and the indentation for the mouth is circular.

Fig. 69 is a curiously ornamented rim from Oswego Falls. It is quite light in color, and has a double row of large indentations on top. On the edge are vertical and curved notches or grooves. Three lines of ellipses are below these, and then several rows of somewhat arrow-shaped indentations, lapping one on another.

Fig. 70 is the larger part of a vessel from the Otstungo site, near Fort Plain. The lower part is neatly rounded, and the ornamented part now occupies about half the side. This is adorned with horizontal, vertical, and diagonal grooves. This part very slightly projects outside of the rest. It probably was not much higher. Fig. 71 is from the same place. It is a much curved fragment, ornamented by the impressions of finger nails. Such specimens occasionally appear elsewhere. Fig. 72 is from Oneida lake, and shows a frequent ornament, unusually arranged. At the edge of the rim are elliptic notches, and below are horizontal, vertical and diagonal lines, with the small and deeper indentations in them which are so common. These are neatly arranged, but the fragment is somewhat peculiar in having these continued in another series below the projection.

Fig. 73 is a curious rim from the Seneca river, of a type apparently more common in Canada than in New York. The peculiar feature is the raised vertical bars, protruding from the side and passing over the top. These have cross grooves, and come to a point above the rim, making deep notches in it. There are irregular vertical lines between these bars, which latter project $\frac{3}{16}$ of an inch above the general surface. The rim is thickened and ornamented within. The fragment is the projecting upper part of the vessel, which was quite thin below this. The vertical lines pass over the rim and within, making a scalloped edge.

Fig. 74 is from Brewerton, and has diagonal zig-zag grooves above, giving it a rich appearance. Below are horizontal moldings, with lines of diamond indentations. Fig. 75 is a neat, notched rim from Onondaga lake, ornamented on top. The undulating lines give it somewhat the appearance of Zuni ware. Fig. 76 is a fragment from the same place. It has an eccentric pattern of curved and irregular grooves, with some sharp angles, very difficult

to describe. It is unique. Fig. 77 shows part of a large fragment from a fort on the north side of the Seneca river. The rim has long and sloping grooves, with horizontal lines below. One of the bars between these lower grooves has deep and regular indentations on the lower side, a very unusual feature.

Fig. 78 shows part of a very fine rim from the Garoga creek fort in Fulton county. It is notched and ornamented within. The indentations on the outside, just below the top, are both ellipses and diamonds. Six horizontal grooves are beneath these, and still lower are diagonal grooves extending into the deep notches which mark the edge of the bold projection. The curve is so slight that the vessel must have been large. A large and fine fragment from the same place shows the impression of the detached human body, and one of the very long arms remains. This site may not date far from 1600, as a tubular brass bead was found there, and it is one of the three oldest known Mohawk forts. Fig. 79 is part of a rim from another of this early trio, the fort near Fort Plain. A small part of this is given to show the vertical double curves which make the upper part of the pattern, and which are sharply indented. Below are diagonal grooves.

Fig. 80 is from a drawing furnished by Mr R. A. Grider, of Canajoharie. It represents a vessel from West Bloomfield, Ontario county, now in the state museum. This, of course, is of Seneca make, and the fact that there are faces at the angles, gives it unusual interest, partly because such vessels are usually fragmentary, and partly as showing that the Senecas also made these peculiar Iroquois vessels. It might be dated between 1600 and 1630. The rim has raised angles, and it is described as half size. Another, from the same district, has a human figure in full relief.

Fig. 81 is a fragment from a stockade on the north side of Seneca river. The pattern is simply of circular indentations, closely arranged in lines which are mostly diagonal. Fig. 82 is a small fragment from Pierrepont manor, Jefferson county. There is a flat projection from the surface above and below. On the upper part of this, and below it, are lines of elliptic indentations. Part of the projecting surface has narrow horizontal grooves finely divided.

Fig. 83 is a fragment from the double walled fort near Baldwinsville. There is a horizontal line of moderate sized crescents, and another of ellipses. Others like this occur, and the grooves, with deeper, rounded indentations, are frequent.

Fig. 84 is a vessel found a mile west of Fort Plain. It is a well-rounded vessel with a moderately projecting rim. There are two moldings at the top, and below these a row of elliptic indentations. The projection is neatly notched, and there are vertical grooves in the plainer surface just below. It is $4\frac{7}{8}$ inches deep, and $5\frac{1}{8}$ in diameter. Fig. 85 is a double cup from the hill east of Wagner's hollow. The base is uniform, but there are two constrictions above, where the two cups open at an angle. This rare article is ornamented with diagonal and vertical lines, and is $1\frac{3}{4}$ inches across. Fig. 86 is also from the bluff near Wagner's hollow. It has deep diagonal grooves, crossed by those which are horizontal, thus forming lines of angular projections. The usual basal projection is deeply notched.

Fig. 87 is a rim from Oneida lake, decorated with horizontal and sloping lines, and with the basal projection notched. Several large rings, with smaller ones inside, are also arranged in a sloping line. This feature is that of the Jefferson county pottery, not much farther north, and it probably came thence. Fig. 88 is a fine rim from the Otstungo site, near Fort Plain. It has notches within and on top. From the top there is a broad slope outward to the prominent projection, which is deeply notched at the edge. This broad surface is divided into checker work by diagonal grooves, sloping both ways at right angles. The work is neat.

Fig. 89 is from the fort west of Cazenovia, and is taken from a photograph. The length was probably double that of the figure. It is part of a very broad and short human body, laid on the ornamented vessel in the usual way. The lower limbs show little more than the feet, and the whole figure may have been grotesque. Fig. 90 is a rim from Henderson Harbor, in Jefferson county. The edge of the rim is finely and neatly notched, the remainder of the surface being adorned with horizontal and diagonal lines of varying width. The prominent feature is two lines of crescents, sloping in opposite directions between the diagonal grooves.

Fig. 91 is made from Mr R. A. Grider's drawing of a Seneca vessel, now in the state museum. It is of full size, and came from West Bloomfield, Ontario county. The same projecting and deeply notched rim appears sometimes farther east, as well as the triangular indentations surrounding the vessel in a single row below. Curved grooves, arranged diagonally, appear on the rim between the top and the graceful notches below. Fig. 92 is a perfect vessel from Cayuga county, of actual size. It has an undulating and expanding simple rim, with two opposite elevations. There are elliptic indentations below the edge, reaching all around, and the whole surface is slightly furrowed from top to bottom. It is from Scipioville, where many of the relics are at least as late as the latter part of the 17th century.

Fig. 93 is a fragment found near the head of Onondaga lake, at a spot known as Kaneenda, and occasionally occupied about 1700, as well as much earlier. Small human faces occur there on vessels, of the type found at the fort on lot 69, Pompey, a place of national residence about the year 1630. This stronghold brought the Onondagas nearer to this lake, and they partially made it a new fishing place. The fragment represented has a small and peculiar ornament on an otherwise plain surface. There is a line of very small rings, with a curved line above each one, coming to an angle behind, much like a representation of the human eye. No age can be assigned to this.

Fig. 94 is a small but finely formed Mohawk vessel, found in a Montgomery county grave, along with iron axes, beads and other modern articles. It is oblong, and the lateral rim is deeply curved, rising into a high and obtuse point at the ends. The rim is notched above and on the sides. A broad groove sweeps along beneath this vertical grooving on the sides of the rim, and grooved lines curve outward to the bold projection beneath. At one end of this projection is another which is vertical and ornamented, and strikingly suggestive of the prow of a ship. Below these projections the vessel is neatly rounded out, but with rather sudden curves. The bottom is flatter than usual.

Fig. 95 is a handsome rim from the early Onondaga fort west of Cazenovia. Near the top a row of vertical points is crossed by a narrow longitudinal groove. There are two horizontal grooves below this, with diagonal grooves below them. Between these is a row of curved lines, apparently finger marks. Most ordinary patterns are found on this site. Fig. 96 is a very neat rim from a stockade on the south side of the Seneca river. The top is nicely rounded as well as notched. Two horizontal grooves are below this, and still lower are parallel diagonal lines arranged in groups with opposite slopes. The basal notches penetrate these.

Fig. 97 is a perfectly plain Seneca vessel from West Bloomfield. There is not even an angular projection. Fig. 98 is a rim from the fort west of Cazenovia, which is of unusual design. The surface above the projection is divided by vertical grooves, and every alternate space between these is divided into squares by transverse grooves. Fig. 99 is a rim from the fort on the east bank of Garoga creek, in Fulton county. The edge of the rim has a spiral fluting, beneath which are horizontal and diagonal grooves. Fig. 100 is a characteristic fragment from Henderson Harbor, showing the three elliptic indentations so common in that region. The rim is slightly notched across and ornamented within. Most of the outside ornamentation is of short dashes arranged in lines.

Fig. 101 is a Mohawk rim with a human figure, which is nearly full length, the usual projection terminating it at the knees. The body and limbs have cross bars, and there is an elaborate array of grooves in almost every direction. This is from the fort in Fulton county, which seems one of the earliest occupied by the Mohawks in New York. At the foot of the hill on which this stood, are the clay pits used in making these vessels. Large fragments are frequent there.

Fig. 102 is a Seneca vessel with a deep rim projecting abruptly from the bowl. There are two elevated angles. The broad projection is ornamented with three encircling grooves, and a row of elliptic indentations. This is from West Bloomfield, like several others figured for this paper. Fig. 103 is a rim from the fort in Fulton county, notched, and with narrow horizontal and diagonal

grooves. Below the uppermost of these is a row of fine dots. Fig. 104 is part of a rim found northeast of Canajoharie. The upper part has a row of inscribed chevrons, with horizontal grooves below. The full fragment has also diagonal lines. Fig. 105 is from another Mohawk fort of the same period, that near Fort Plain. It is a plain rim as far as elevation or expansion is concerned, and is ornamented with two lines of circular indentations, separated by a horizontal groove. Fig. 106 is a fine rim of unusual character, found with 104. The undulating upper edge is deeply notched, and below this are three grooves. Then comes a wide and thin projection, with deep and graceful notches, forming a closely sinuous line. Fig. 107 is a rim from the fort near Cazenovia. It has two lines on the top and is notched within and without. Outside is a thin and rather broad projection, with an undulating edge.

Fig. 108 is a rim found near Palatine Church, Montgomery county. It is adorned with various grooves, and has a human figure which has lost its head. The customary projection cuts off the legs at the thighs. The hands and fingers are well defined, and there are the usual cross bars.

Fig. 109 is a rim from Rice's woods, north of Palatine Bridge. It is ornamented with a row of long and vertical ellipses, with broader ones at the projection. Fig. 110 is an angular rim from Jefferson county. The principal ornaments are broad grooves, whose cross divisions suggest the impress of a row of corn, but they are uneven, and sometimes irregularly curved. The style is bold rather than elegant. Fig. 111 is from the same county, as might be inferred from the three rings in the usual position. On either side of these are nearly vertical but curving grooves, and there are notches on the edge of the projection. Fig. 112 is from Montgomery county, north of Palatine Bridge, and has the chevron pattern just below the rim, but this is indented in a different way from the other example given. There are broad horizontal and diagonal grooves, and the base is deeply notched.

Fig. 113 and the next three are Seneca vessels, all from West Bloomfield, and much reduced. This one is broad, and the rather narrow projecting rim has notched edges, and two parallel lines on

top. Fig. 114 is plain, but might be called a pitcher form, as the rim has a wide projection in one place. Fig. 115 has a flaring rim, deeply notched on the lower edge. Fig. 116 is proportionately much narrower, but while a smaller vessel the projecting rim is much deeper, and is adorned with diagonal lines and deep notches.

Fig. 117 is taken from a small photograph of one of the finest perfect inland New York vessels, as far as size goes, and belongs to Mr A. G. Richmond, of Canajoharie. The ornamentation is so simple that a small illustration suffices for the general character. It was found by an Adirondack guide, some years since, in a cave in Otter creek valley. The contraction is quite near the rim, and there is a simple ornament around this narrow part. The greatest diameter is below the center, and is 13 inches, being three more than across the top. The height is 14 inches, and Mr Richmond bought the vessel of the finder some years ago, taking pains to have a certified account of its discovery. Caves have sometimes afforded good examples of New York pottery, and should be carefully examined wherever there are indications of man's former presence, not alone with reference to remains of pottery, but of other things as well.

Fig. 118 is an Onondaga rim, quite broad, and with two parallel lines on top. The edge is indented within and without. Fig. 119 is from a Seneca river stockade, and has lines of large square indentations, a frequent pattern. Fig. 120 is a rim from the same site, deeply notched on the edge, and with diagonal grooves below. Fig. 121 is a rim from Rice's woods, north of Palatine Bridge, and has a row of circular indentations below the moderately elevated angle. At the angle is a shattered face, with a sloping row of large elliptic indentations on either side. Below there are diagonal lines extending to the angular base, which slopes upward on each side from the lower point of the slightly indicated body. This unusual arrangement suggests butterfly wings. Fig. 122 is a rim from the small earthwork on Fort Hill, near Savannah, N. Y. There are two lines of small indentations on the flat top, and vertical interrupted grooves within, similar to the divided grooves without. The latter are diagonal, meeting at an angle.

Fig. 123 is taken from the small figure in Morgan's *League of the Iroquois*, which he considered typical of the pottery of the Genesee valley. It fairly represents some forms. Fig. 124 is taken from a small picture of one of the cave vessels of New York city, and was described at the time as 'of dark red clay, 18 inches in diameter at the mouth, and 2 feet high. It is contracted slightly 3 inches from the rim, and flares a little in the middle. The bottom has the same curious peak as that of the pot found in the knoll. Near the rim are nine roughly executed rows of indentations, evidently made with a sharp stick. Perpendicularly from the lowest row run roughened belts of clay about $2\frac{1}{2}$ inches wide.'

After the above was written Mr W. L. Calver wrote very decidedly in reply to a question about the pointed base. He had not been able to examine closely the vessels in question, the curators of that department of the American museum of natural history being away, but said, 'As far as I can see none have anything like a pointed base, and as I have known them from the first discovery, I can say quite positively that none found hereabouts ever had any other than rounded bottoms. My large pot, from near the Chenoweth cave, has a rounded bottom. Mr A. E. Douglass says that he knows of no New York pottery with pointed base.'

The feature claimed was so improbable that the figure here given was introduced with some hesitation, but the claim was made so confidently that it was thought best to show by one example just what it was. The opinion of so careful an archeologist as Mr Calver, with special experience in local work, settles the question. The vessels from the metropolis are like those from other parts of New York.

A number of vessels have been found in New York city, in the vicinity of Harlem, which are worthy of notice, and perhaps closer study than can be given them now. Illustrations and descriptions were given in the New York papers, at the time they were found in 1890. These prove unreliable, but one of the simplest forms is reproduced here to show one supposed feature of this pottery. The accessible figures of the others differ greatly in outline from common forms. Some were reconstructed from fragments, and the

correctness of the restoration is another question. Some were found in caves, and several are of large size. The peculiar feature, if it proves such, is a protuberance at the base, so that the vessel could only have stood in mud or sand. As figured the greatest diameter is below the middle. One of these, from a cave, is described as having a mouth diameter of 5 inches, and a body diameter of 9, an unusual proportion in New York vessels. It was also said to have had a protuberance at the base, and three zig-zag lines encompassed the rim, interrupted by four vertical divisions at regular intervals. A large vessel was also figured, and was taken from a wooded knoll, near the Harlem river, and the ornaments are the same as in Iroquois pottery, but in other ways it differs from that form. It is 18 inches high and 5 inches across the top, and was thus described. 'Around the rim ran a pattern of lines grouped in triangles. The lines are perfectly parallel, and show that they were made with some instrument less primitive than the pointed stick. . . . It terminates in a rough little apex that would prevent it from standing upright on anything harder than mud.' Some particulars are added not quite consistent with the figure. Several others were described, one having 'a mouth but 5 inches in diameter, with a flaring body almost a foot through, and an almost flat bottom. The rim has a double row of indentations.' These are presumably early articles, but the restoration has been questioned.

Fig. 125 is a small vessel, represented of actual size. It is $2\frac{1}{2}$ inches high, with a diameter of $1\frac{3}{8}$ inches. This is from what is known as the Cayadutta fort, a few miles north of Fonda, being one of the three forts belonging to the three Mohawk clans when they first settled in their New York territory. The site affords faces on pottery, but of a ruder type than usual. This feature connects it with other recent sites, but its age is quite as well shown by a long bead of rolled brass. The vessel figured has an unusual contraction in the center, and the whole work is quite rude.

To illustrate one form of early Iroquois pottery, fig. 126 is given, being a Canadian vessel found about nine miles northwest of Ogdensburg, N. Y. It has the angular rim, fragments of which are so frequent, and the usual expanded bowl with a rounded bot-

tom. With this may be compared Mr F. H. Cushing's figure of an Iroquois vessel in fig. 127, from a report of the Bureau of ethnology. He supposed this form was founded on an earlier vessel of birch bark. If the figure is correct, the pointed base is abnormal rather than typical. All Iroquois vessels here represented have a broadly rounded base. Fig. 129 was found with 126, and is introduced for comparison. It shows the deep and projecting rim, as well as ornaments below this.

Excepting this, fig. 128 to 137 inclusive, are from West Bloomfield, N. Y., with one exception, and belong to Mr Leo Walter Hildburgh, of New York city, who kindly presented photographs of all. Most vessels found there are of the historic period, and it has furnished many. Mr Hildburgh says that these are 'from graves containing articles of Indian and European manufacture.' Fig. 128 has a notched rim, and the greatest diameter is about 1 foot. Fig. 130 has a sloping rim, with widely separated points. The diameter is the same as the last. Fig. 131 is a small, plain and shallow vessel, but little over 6 inches across. Fig. 132 is from Lima, N. Y., and has a broad rim with deep basal notches. Its diameter is $10\frac{1}{2}$ inches. Fig. 133 has a deep and notched rim. This and the next have a diameter of $8\frac{1}{2}$ inches. Fig. 135 is a typical example of the highly ornamented early form, with a broad and angular rim. It is a foot in diameter. Fig. 136 is rather rude in every way, but has a deeply notched rim. The diameter is 8 inches. Fig. 137 is one of the rarest forms of earthen vessels, and it is of unusual size for the kind being on the same scale with all those furnished by Mr Hildburgh. It is a double pot, ornamented, but having one bowl broken.

To this review of early New York pottery a few notes may be added. It will be observed that the vessels found at the Harlem river are of large size, but this is hardly a rare circumstance. They are partly restorations, and the true form is in question still. Many Iroquois vessels must have been quite as large. At the Forks of Fish creek, Annsville, Oneida county, vessels are said to have been found from 2 to 3 feet in diameter. Mr W. W. Tooker writes of one found by him in Sag Harbor, 'The large vessel, which holds

about half a bushel, I took from a grave in this village. There was another of nearly the same size, but so badly broken that it could not be restored. It was molded in a grass basket, without ornamentation except on its top edge, where there are cord marks, and it is pierced with two holes for suspension.' This is not a common feature. In Southold he found two smaller vessels in a grave, holding a quart and a pint respectively.

The Rev. O. C. Auringer, of Troy, writes that he has found no earthenware east of the Hudson, while it occurs plentifully west of that river. This must not be taken as a general rule, however, though it certainly is less frequent eastward. In New York it had its highest development among the Iroquois, although they used dishes and vessels of bark and wood, as they still do. Their near kindred, the Hurons of Canada did the same. Each took his bark dish and wooden spoon when invited to a feast. These articles remained long after other changes came. A Huron Christian, named Chihwatenhwa, told his friends in 1639, that they should not reject Christianity because it was brought by the French, 'I ask you, when at the beginning you saw their axes and kettles, after having recognized that they were incomparably better than our axes of stone, and our vessels of wood and of earth, have you rejected their axes and kettles, because this was a new thing in your land, and it was the custom of France to use these, and not your own?'

Something might be said on the aboriginal names of vessels, of whatever material, and it would prove a suggestive theme. They varied even among the Iroquois, and that in a marked degree. The Oneidas and Mohawks, the most recent comers, differed in their usage from the three western nations, as might have been expected, and yet were so related as to sometimes use their names of kettles. Commonly they did not. In other ways the reciprocal influence of New York and Canada forms a curious study, commerce, migration, peace and war, all contributing their part.

The remaining figures of vessels are from those in the state collection, which includes some of the most remarkable specimens now to be found.

Fig. 241 shows a fine vessel adorned with a human figure in bold relief, and not as much conventionalized as in most examples. The head reaches the rim, and the feet are less than half way above the rounded base. The angular rim is adorned, much as usual, with grooves and indentations, and is altogether unique. It is another of the fine articles obtained for the state collection from West Bloomfield, and is $6\frac{1}{2}$ inches high, with a diameter of $5\frac{3}{4}$ inches. Another illustration of this is given in Fig. 245.

Fig. 242 is a simpler vessel from the same place, and there are others less adorned, some of which have a slight ornamentation at the rim, while others are perfectly plain. This has diagonal grooves below the rim, and a row of large indentations beneath these. It is much reduced in the figure, having a depth of nearly 5 inches and a top diameter of $4\frac{3}{4}$ inches.

Fig. 243 is also from West Bloomfield, and is $4\frac{1}{4}$ inches deep, with a diameter of $3\frac{7}{8}$ inches. The ornaments of indentations and diagonal grooves are carried farther down the sides than in the last.

Fig. 244, from the same place, is a good example of an Iroquois vessel adorned with a conventionalized human figure. The body and legs have the customary cross marks, while the arms are formed by elliptic indentations. Such vessels are now very rare. This is also reduced, the dimensions being a depth of $6\frac{1}{2}$ inches, and a diameter of $6\frac{1}{4}$ inches. Vessels of this kind were much in use among the Iroquois about the year 1600, and for a few years later. As far as reported they appear only among the Mohawks, Onondagas and Senecas, but there is no known reason why the Oneidas may not have used similar decorations, but none have yet been found in their territory.

Fig. 245 is a photographic view of a Seneca vessel already figured in a different position, it having a less diameter one way than the other. The human figure does not seem to have been molded separately, nor does it have the cross bars so common among the Mohawks and Onondagas. A perfect vessel with that style of ornament is something much desired.

The number of entire or nearly whole vessels of clay has proved unexpectedly large, but it is to be regretted that so many have been

carelessly destroyed. It is hoped that a few early Mohawk and Onondaga sites may yield much of high value in this way, should the state provide means for painstaking research. It is matter of congratulation that so much has been already secured, but this initial work only shows how important is the field, and how much may be done.

CLAY TOBACCO PIPES

In an article on the 'Antiquity of the tobacco pipe in Europe,' by Edwin A. Barber, printed in the *American antiquarian* in 1879, he says, 'It has for some time been a matter of dispute among antiquaries whether the custom of tobacco smoking originated in the eastern or the western continent; but of late years America has been generally accepted as the birthplace of the art.' The great quantities of small clay pipes recently found in Great Britain, known in England as fairy pipes, in Scotland as Celtic or elfin pipes, and in Ireland as Danes' pipes, he said had revived the question. Some had been found close to Roman remains, and thus it had been claimed that they were Roman relics of the second century. Other recent articles found with them disproved this theory. Sir Daniel Wilson, of Toronto, fairly discussed this question in his *Prehistoric man*, and arrived at this conclusion. In Fairholt's *Tobacco; its history and associations*, the subject is also treated, and he sums up by saying, 'We may be certain no authenticated discovery of Celtic or Roman antiquities, where the ground has been entirely undisturbed, includes tobacco pipes.' Mr Barber thought the fairy pipes of Ireland the oldest form known in Great Britain.

There seems little doubt, however, that smoking was known in Europe before Raleigh's time, though perhaps little more than this, for King James, in 1603, said 'It is not so long since the first entry of this abuse amongst us here, as this present age can very well remember both the first author and forms of its introduction.' Capt. John Smith, who loved the weed, gives Ralph Lane credit for its introduction into England. 'More by token that Lane brought with him that blessed herb tobacco, and was the first man that brought it to England; and yet have I heard men say, some that it was Drake, others that it was Raleigh. Nor are they altogether wrong, for if Raleigh had not sent Lane out, and Drake had not

brought Lane home, he could not at that time have showed us Englishmen the virtues of that precious herb.' English pipes of the 17th and 18th centuries, were used in trade or as presents to the Indians, and in speaking of New York examples there will be occasion to quote Mr Barber again.

The oldest pipes found in New York are of stone, the Iroquois clay pipes succeeding these early examples, and being followed by those of red pipe stone and some of the fine grained slates. In 1643 Roger Williams said, 'Sometimes they make such great pipes, both of wood and stone, that they are two feet long, with men and beasts carved, so big or massive, that a man may be hurt mortally by one of them, but these commonly came from the Mauguawogs, or the men-eaters, three or four hundred miles from us.' His account sounds like pipes of stone, but he probably never saw a Mohawk Indian or his pipe.

Capt. John Smith described the Susquehanna Indians, who were kindred to the Iroquois, and we get the same impression of stone pipes, though he does not call them such. He tells of 'his tobacco pipe, three quarters of a yard long, prettily carved with a bird or beare, a deare, or some such device at the great end, sufficient to beate out the brains of a man.' In both these cases we would suppose a large stone bowl intended, with a wooden pipe stem inserted, as in the modern pipe of peace. Wood also said that the Narragansetts made large stone pipes, which they sold to other nations. It will suffice to say that such pipes were not made in New York at the time of the Dutch colonization, nor were they then apparently used there, except very rarely.

The usages connected with tobacco are of great interest. It was an acceptable offering to spirits of every kind, and a little bag of it is attached to a large wooden mask lying before the writer, to keep the spirit of the mask in a peaceful mood. It allayed storms, and was grateful to the thunders. It was always used at the burning of the white dog, and was indispensable at councils of peace or war. In digging ginseng a little of it was scattered over the first plant found, which was then left unharmed. How largely it entered into Indian life may be seen in old chronicles, or even on a reservation now.

This native northern tobacco, *nicotiana rustica*, is used in all sacred functions, and grows spontaneously when once introduced. It has a yellow flower, and is smaller than our commercial kinds. In the prosperous days of the Tionontatie, or Tobacco nation of Canada, it was a source of revenue to that ancient people. Loskiel said, 'The species in common use with the Delawares and Iroquois is so strong that they never smoke it alone, but smoke it with the dried leaves of the sumac or other plants.' The Onondagas still cultivate this species sparingly, calling it *oyenkwa honwe*, real tobacco.

On his pipe the Indian exercised his highest taste and skill, nor did he wish to lose his own enjoyment of its beauty. Early clay pipes had the finest features within the smoker's sight, the face on the bowl being usually turned toward him. Later examples often reversed this feature, both in clay and stone. Quite commonly it will be found that the figure on the bowl was molded separately, and then attached. Detached heads occur, broken off, and often beautifully wrought. Symmetrical designs appear, as when two or more heads of any kind are grouped in various ways. Very often the form is both simple and elegant, as in the trumpet pipes with their graceful curves. After a time, however, the cheap and convenient pipe of the white man, or the elegant red stone pipe of the west, displaced the work of the native forest artist.

A very large proportion of the aboriginal clay pipes of New York were made by the Iroquois, and many are very neatly finished, the work on them being much better than that on earthen vessels. Some are so smooth as to suggest a dull glaze. This appearance, however, comes from the careful finish of the surface. They vary much in color, as the vessels do. Some Seneca pipes have almost the appearance of black marble. Those found farther east are much lighter in hue. The ornamental work varies still more, and is often quite artistic. Human heads, with those of quadrupeds and birds often embellish the bowls, and more rarely the stems. Lines and dots are sometimes tastefully arranged. The upturned and open jaws of some animal occasionally form the bowl, while some peculiarities hint at a knowledge of the whites in a few from prehistoric sites. The Algonquins also made pipes of clay.

As a rule stone pipes were earlier than those of clay, but not invariably. A primitive feature appears in most cases; that of having any face toward the smoker. One curious example has the face turned to one side. Apparently at a later day there was sometimes a double symmetrical representation on the back of the bowl, but this is not a common feature. In a very few cases grotesque human faces are interwoven all over the bowl and stem. The so-called trumpet pipes are frequent, but many others have a similar curve between the bowl and stem. Straight pipes are rare, and those with flanges along the stem are local.

Precisely when European pipes began to be used by the New York Indians, we may not be able to decide. Large white stems, carved as ornaments appear on the Onondaga site of 1654, but this was occupied for some years longer. No Dutch pipes have been found, known as such, and it is not likely that English pipes would have been introduced inland, till the English took and retained possession of the province of New York. On some sites of the last quarter of the 17th century, such pipes have been found, and some examples of these will be given. In 1684 duties were laid on tobacco pipes and boxes intended for the Indian trade, amid a host of other things, so that they must then have had an extensive use here and elsewhere. As public gifts to the Indians they first appear in a council held in 1692, but some may have been given before. The older ones have the bowl rather small and barrel shaped, and the maker's initials may appear on the projecting heel below the bowl. A large number of pipes have been found of these and somewhat differing forms, and some are of much interest to the antiquary. More will be said, as we consider each in turn.

In later councils wampum pipes appear as presents, but without any suggestion of their form or nature. They are mentioned in reports for 1702.

Fig. 138 represents one of these English pipes, found on the site of the smaller Onondaga village mentioned by Greenhalgh in 1677. It has no lettering, and is less swollen than most pipes of that period. The heel at the base of the bowl may have been worn off, and with this the letters would disappear, as they were stamped

within an ellipse below. Another from the same site has the letters E. B., and this kind is somewhat frequent on Mohawk sites, but those with these initials vary much in form. Mr S. L. Frey found similar pipes with the letters R. T., on such sites, and others were found in an Indian grave in Pennsylvania. Prof. E. A. Barber thought these 'were probably made by Richard Tyler, a celebrated pipe maker in the vicinity of Bath, during the early or middle part of the 17th century.' The Dutch, however, were jealous of their monopoly of tobacco pipes, and there is no likelihood that English pipes found their way to New York Indians till toward the close of that century, after the colony changed owners.

Fig. 139 is another white clay pipe from the Onondaga village of 1677, having the heel and cartouche inclosing a monogram formed by an I above an M. It is singular in having a ribbed elevation about an inch from the bowl and around the stem. To these pipes may be added another found on Mohawk sites, and also on Manhattan island and in the Acadian cellars of Nova Scotia. This lacks the earlier heel, and has the name R. Tippet in raised letters and within a raised circle, on the side of the bowl. The maker is unknown, but the pipes probably belong to the early part of the 18th century, judging from their general character. Mr Richmond has a fine and perfect one from an Indian grave at Canajoharie.

Fig. 140 is a very fine and perfect pipe from a grave in Scipio, Cayuga county. It seems a gull's head, with the beak upturned, the bowl being at the base of this towards the mouth of the smoker. There are grooves and dots on the back of the bowl. It is $6\frac{1}{2}$ inches long, and probably of the early part of the 17th century. All the pipes on this plate are two thirds of the actual length and breadth.

Fig. 141 is a plain pipe, but slightly curved, and much like those of Cayuga. It was found near Rome, and is 3 inches long. There are many of these plain pipes, having the bowl and stem at various angles.

Fig. 142 has a cylindric bowl and no stem. The greatest diameter is at the stem-hole. This form is unusual in clay, though better specimens have been found at Fort Hill, Auburn. This is the only pipe which has been found at Rice's woods, north of Palatine Bridge. It is somewhat rude, and is $1\frac{1}{4}$ inches broad.

Fig. 143 is quite slender, and has a grotesque face and high head dress, the latter a frequent feature in Cayuga pipes. Behind the face are grooves and dots. It is $5\frac{1}{4}$ inches long, and is said to have been found at Scipioville, a recent site of considerable extent.

Fig. 144 is a fine and perfect pipe of black clay, in the state collection, and is a good example of this characteristic pipe. An open-mouthed bear's head forms the bowl, and a spiral groove encircles the bowl and stem from end to end. Although this form of pipe is not rare, perfect examples are, and this is accordingly prized. This is a Seneca pipe from West Bloomfield, where many fine pipes and vessels have been found. In fact the populous Seneca country has proved one of the most productive fields for antiquaries, although a large proportion of the relics are recent.

Fig. 145 is a frequent form of Iroquois pipe, most abundant in the 17th century, and two of this type were found with the fine pipe which follows. It seems to have been most in use about the middle of that century, and a pot of French copper coins was among the many modern articles found in the same grave. There were 44 of these coins, dated from 1642 to 1656, and many French articles occur in this and adjoining graves in Cayuga county. It has cords around the top, and is $6\frac{1}{4}$ inches long.

Fig. 146 was found in a grave at Brewerton, which also contained a gun and European articles. There were two of the long pipes with this, having corded bowls; and also a unique pipe having a panther's head turned to one side. The pipe here figured has lost a part of the eagle's beak, but is otherwise perfect. Both head and tail project, and both are adorned with dots and grooves. It is very smooth, and almost black, and is one of the largest and finest clay pipes yet found in Onondaga county, being $8\frac{3}{4}$ inches long.

The figures on the succeeding plate are reduced in the same proportion as the last. Fig. 147 is a plain and angular pipe, from Farley's Point, on the east side of Cayuga lake. It is $5\frac{1}{4}$ inches long, and has the flange on each side of the stem, so often seen in Cayuga pipes.

Fig. 148 is a slender Cayuga pipe, with a very long stem and low bowl, the latter ornamented with dots and moldings. It is 7 inches

long, and comes from Scipioville. Although of what is called the trumpet form, it is almost unique in character.

Fig. 149 is a fine turtle pipe from Schoharie county, and was found under a stump. The bowl is raised upon the back, and the feet and projecting head are well worked out. It is a fine example of this form of pipe, $7\frac{1}{4}$ inches long.

Fig. 150 is a pipe bowl from Jefferson county, strongly resembling two from Madison county in its niche-like character, as well as one from the Minden site near Fort Plain. There is a face and a rude figure in a recess, surrounded by a double arch. These pipes apparently belong to the end of the 16th century, but suggest to some a knowledge of Europeans. They are rather rare. One comes from Onondaga.

Fig. 151 is a fine and curious pipe found in a grave at Boughton hill, where the Seneca capital of 1687 stood. There is an upturned human face above, and arms below the rim of the bowl. Below the latter are grooves, and along the stem are grooves and elliptic indentations in the fashion of that century. Another fine pipe was found in the same grave. One has been described from the Huron territory in Canada much like this, and the Senecas had a town almost entirely Huron, after the overthrow of that people. The Huron and Canadian pipes of this form may have come from the same hand. The length is $7\frac{7}{8}$ inches.

Fig. 152 is a large and fine bowl in the form of a human head. It is very well made, and resembles some of the early pipes from Jefferson county. It is $2\frac{1}{4}$ inches wide, and was found in Lenox, Madison county, not far from the site of 1615, but is probably of earlier date. From the latter, at Nichols' pond, Fenner, come some of the high and corded bowls of that century, so frequent elsewhere.

Fig. 153 is a large and heavy pipe, with the abrupt angles neatly rounded. It has a flaring bowl, and is perfectly plain excepting four shallow horizontal grooves midway on the front of the bowl, and two large indentations on the back. This massive pipe is perfect, and is $7\frac{1}{4}$ inches in extent. It was found in Pompey, and thus seems of the 17th century.

The next plate is reduced in the same proportion. Fig. 154 has a wolf's head projecting from the bowl, with grooves around the latter. It is a recent but fine Cayuga pipe, and was found in a grave with European articles. These projecting heads were often broken off, and sometimes had a secondary use as ornaments. Usually they were molded separately, and attached before baking. The form was common in the 17th century and a little earlier. This fine pipe is $6\frac{3}{4}$ inches long.

Fig. 155 shows a fine trumpet pipe from the Seneca river, $3\frac{5}{8}$ inches long. It comes from a fishing hamlet, where there were also camps of uncertain age. A molding at the base of the bowl is an unusual feature in this form of pipe.

Fig. 156 is a plain and angular pipe, with a molding around the rim. It is 4 inches long, and is a Cayuga pipe from Union Springs. The type is frequent there.

Fig. 157 shows a pipe bowl of a pattern found in a number of places. It has an expanded base, divided by vertical ridges and grooves. These ridges are notched across. There are four human faces between these and on opposite parts of the bowl. In some examples a plain surface takes the place of the face. Above these ribs and faces the bowl contracts and then expands toward the rim. This part has horizontal grooves. This bowl comes from Rodman, Jefferson county, and is $1\frac{7}{8}$ inches across the rim. It seems to have been in use late in the 16th century, from the connection of sites.

Fig. 158 is from a camp site a mile east of Skaneateles lake, and is $3\frac{1}{2}$ inches in extent. A human face turns toward the smoker, and much resembles one found in a stockade near Baldwinsville. There are three vertical grooves below the chin. The curved stem is nearly rectangular, but the angles are neatly rounded. The material is quite gritty, and the rim is a little damaged.

Fig. 159 is a thick and coarse bowl, much like a flower pot in form, but it has a slight inward curve at the top. The rim is made with an outward slope all around, and below this are large elliptic indentations. It comes from Fenner, Madison county, and is $1\frac{3}{4}$ inches wide by $2\frac{1}{2}$ deep. But for the location of this at or near Nichols' pond, it would not be thought an Iroquois pipe, and may not have been.

Fig. 160 is a neat and peculiar little pipe bowl from Seneca county, 1 inch wide. It is very angular at the base, and midway the upper half of the bowl projects, and is adorned with vertical and horizontal grooves. The base gradually expands below this abrupt projection, and is decorated with diagonal grooves and dots.

Fig. 161 is a very well made pipe, representing the human knee and foot slightly conventionalized. The stem is a little broken, but it is yet 4 inches long. The sole of the foot forms the rim of the bowl, and the ankle and toes plainly appear. It is from the Otstungo or Minden site, where many fine pipes have been found.

Fig. 162 is a serpent pipe from West Bloomfield. The reptile twines around the pipe from the mouthpiece to the top of the bowl, where the head appears. This gives the whole pipe a spiral appearance, found in some other Seneca pipes where the serpent is not so distinctly seen. This creature was a favorite decoration on many fragmentary pipes. This one is $4\frac{7}{8}$ inches long.

Fig. 163 is a remarkable pipe from Boughton hill, suggesting a Huron maker, and is $6\frac{1}{2}$ inches long. It was taken from a grave with another already described. The human head, with its little cap, is hollow, a remarkable feature, but a hog's head, detached from a pipe and found near Canandaigua lake, resembles it in this respect. This hollow head rises above the bowl, and has seven perforations. Arms and legs appear on the bowl, and there are grooves across the back of the figure. The fashionable lines and indentations follow the stem. The face is less upturned than in a previous example.

In succeeding plates the figures are of actual size.

Fig. 164 is one of the curious many faced pipes found on one or two Onondaga sites only. This is reported from Indian Fort, in Pompey, but may be a mistake for the stockade a few miles south, where they have otherwise only been found. The bowl alone remains of this pipe, which is the largest known of this form, being $2\frac{1}{4}$ inches wide. Six grotesque faces form the rim, and below these are two rows of five faces each, which are divided by spiral lines. Although much larger the general appearance is much less artistic than that of one yet to be represented.

Fig. 165 is another of these, more angular than some in its curves. This is from a photograph, and there seem to be six faces around the top. A fragment of a stem shows that these faces follow the curved and diminishing stem nearly to the mouthpiece, which is neatly rounded and has a molding at the end. This is from the Onondaga site west of Cazenovia, where several have been found. The stockade was occupied about 1600, and this unique type died with the maker.

Fig. 166 is part of a pipe bowl which is encircled by a serpent, the head appearing below. The form is found in many places, but this comes from a circular stockade near Baldwinsville. There are grooves between the scaly folds.

Fig. 167 is an owl's head pipe from Nichols' pond, and is $2\frac{3}{16}$ inches wide. These are often found in a fragmentary condition, and are rarely as perfect as this. It was a favorite design among the Petun nation of Canada, and sometimes is combined with other things in New York.

Fig. 168 is a pipe bowl from Ontario county, which is of simple design. There are six moldings above, and the top is nearly rectangular. Near the base is a large molding around the bowl. The greatest diameter is 2 inches.

Fig. 169 is a handsome fragment of the rim of a pipe bowl, much like a high and pointed cap or miter. This is ornamented with horizontal and diagonal grooves, the latter converging, and most of them notched. The color is a bright red, and it must have been a beautiful article when perfect. It was found on a stockade site a little west of Baldwinsville.

Fig. 170 is a coarsely made pipe, with a barrel shaped bowl, the horizontal lines above and below suggesting hoops, and the vertical lines between, staves. It is 4 inches long, and was obtained near Binghamton.

Fig. 171 is a rare form dating from the middle of the 17th century. It was found in a grave at Brewerton, with an eagle pipe and two others, along with European articles. It has the lines of dots frequent in that day, and its notable feature is that the single, spirited panther's head, forming the bowl is at right angles with

the stem. In earlier pipes the face was toward the smoker; a later fashion was to place it on the front of the bowl. There are four grooves under the rear of the head, and the length is $5\frac{1}{4}$ inches.

Fig. 172 represents a fine pipe from an early Iroquois site in Pompey. Two human faces appear side by side, at slightly different angles with the bowl. This arrangement is somewhat rare, and although the pipe is otherwise simple it may be called unique.

Fig. 173 shows a fine bear's head pipe from Pompey, of the early part of the 17th century. The head and most of the body and bowl project greatly toward the rear. There are undulating and nearly vertical grooves on the sides of the body, and the usual grooves and elliptic indentations along the stem. There is the usual conventional projection of the tail, and the surface is polished. The length is $5\frac{3}{4}$ inches. There are many fine pipes of this type, but none, perhaps, uniting so many fine features as this.

Fig. 174 is one of a class where the open mouth of some animal forms the bowl. This is from Cayuga county, and is $4\frac{1}{2}$ inches long. The bear's head is upturned, and the jaws are distended. Snake heads were often represented on similar bowls.

Fig. 175 is another of the many faced pipes found on the Onondaga site of 1600, and is the most graceful in its curves of any yet found, though smaller than some, the greatest diameter being less than 2 inches. One face has been broken off at the top, where there should have been five, but 13 remain on the fragment. The faces are grotesque and curiously intertwined, and the surface is as glossy as in some other pipes of that period.

Fig. 176 shows a fine trumpet pipe, widely expanded at the top. The rim has vertical indentations, and there are bands and dots below this on the bowl. It comes from Venice, Cayuga county, and is 4 inches long. From the location it would seem comparatively recent.

Fig. 177 has the general trumpet form, but is very thick as well as short. The low bowl is widely expanded, and there are moldings below the rim. The length is $3\frac{1}{4}$ inches, and it comes from Kendaia, near the east shore of Seneca lake, where a Seneca village was destroyed in 1779.

Fig. 178 is a miniature clay pipe from Jefferson county, of the trumpet form, $1\frac{1}{2}$ inches long. These little pipes are sometimes met with, both in clay and stone. Many of the Indian pipes, however, held so little tobacco that it was needless to make toy pipes for the boys.

Fig. 179 is a long straight pipe with an expanding bowl, and is much like an inverted long-necked bottle in outline. The stem is almost triangular. The length is $4\frac{1}{8}$ inches, and the greatest diameter $1\frac{1}{2}$ inches. It is from Union Springs on Cayuga lake.

Fig. 180 shows an angular pipe of unusual form, from Rutland, Jefferson county. The top is slightly flaring, and there is an expansion in the center of the bowl, which is ornamented with lines and circles of dots. The projecting base takes the form of the heel in early European pipes, though very much wider. There are also three holes in the stem. The length is $4\frac{1}{4}$ inches. This does not come from a fort, but from an open site.

Fig. 181 is a remarkably fine specimen of a rare type, involving a symmetrical arrangement. The fine pigeon's head on one side of the back of the bowl is balanced by another on the opposite side, and a conventionalized human face appears on the rear between the bills of the birds. This face is an ellipse, with three vertical elliptic indentations. At the top and base of the bowl are broad bands, with elliptic indentations. Between these are 10 horizontal grooves, and there are three rows of long indentations on the flat top of the stem. The bowl is $2\frac{5}{8}$ inches wide, and the pipe $5\frac{1}{8}$ inches. This came from Indian Fort, Pompey.

Fig. 182 shows another of the open-mouthed pipes, apparently of a fish. The head is upturned as usual, the mouth forming the bowl. Below the bowl are circular grooves and lines of ellipses. It came from East Aurora, Erie county.

Fig. 183 is a pretty pipe from Union Springs, $3\frac{1}{2}$ inches long. The top is hexagonal in outline, contracting in a straight slope to the moldings beneath, and ornamented with diagonal lines. Several moldings form the center of the bowl, which again suddenly expands before contracting into the stem, which is quite slender.

Fig. 184 is a curved pipe with a bowl terminating in a rim which is nearly rectangular, but with slightly convex edges. The top is $1\frac{5}{8}$ inches across, and the full length is $5\frac{5}{8}$ inches. There are grooves on the edge of the flaring rim. This was found in the town of Clay, not far from the Oneida river.

Fig. 185 shows a characteristic pipe from Jefferson county, with a human face on the rear of the bowl. It is much compressed, making the face somewhat thin. The eyes are raised ellipses, and there are small elliptic indentations around the rim. The long diameter of the bowl is 2 inches, and the short $1\frac{1}{2}$ inches. Clay pipes are common and variable in that county, and this is a moderately early form.

Fig. 186 is a fine pipe from the Otstungo or Minden site, and more than half of the stem has been restored. In this form it is $6\frac{1}{4}$ inches long. There are notched lines on the stem, and grooved and beaded lines on the front of the bowl. In a double niche, on the back of the bowl, is a child's bust with uplifted hands. An experienced archeologist, on seeing this, at once exclaimed that it was the niche of a saint, which it certainly suggests.

Fig. 187 is part of the bowl of a handsome red pipe, from a stockade near Baldwinsville. The upper part is rectangular, contracting toward the base, and ornamented with diagonal lines and dots. Below this it is circular, with horizontal moldings. The arrangement is very tasteful.

Fig. 188 is a handsome Mohawk pipe from the early fort on Garoga creek, in Ephratah, Fulton county. The curving stem is mostly lacking. The bowl is $1\frac{5}{8}$ inches wide. Above the bold and well-formed face is a head dress of netting.

Fig. 189 shows a pipe of unusual form from Montgomery county. The rim is slightly notched, and the bowl gradually expands below this for half an inch, as gradually contracting again below the angle thus formed. On this angle is a perforation, and there are five horizontal grooves on the front of the bowl. This is from the Otstungo site, and is highly polished.

Fig. 190 has the bowl square on top, and expanded below the angular contraction. The stem joins the bowl at an abrupt angle,

and the bowl is ornamented with grooves. This is $3\frac{1}{4}$ inches long, and comes from Cazenovia.

Fig. 191 is a pretty pipe of the trumpet form, but with a very low bowl, ornamented with circular moldings and dots. It is 4 inches long, and was found a few miles west of Canajoharie.

Fig. 192 shows part of a curious pipe bowl found at Brewerton. It is cylindrical and tapering toward each end, and is ornamented with lines and dots. There is a strong resemblance in this to a stone pipe found in Canada.

Fig. 193 represents a curious pipe bowl found in East Syracuse. The upper part of the front reached above the proper rim of the bowl, and this is partially lost. The front of the bowl represented a human face surmounted by an owl's head.

Fig. 194 is a trumpet bowl, raised on either side of the rim, but this is hardly a rare feature. It is ornamented with lines and dots, both horizontal and nearly vertical, and is $1\frac{3}{8}$ inches wide the widest way. It was found on the Seneca river.

Fig. 195 is of similar form, having the two raised angles. It has circular moldings below the wide band which forms the rim, and is $1\frac{1}{4}$ inches wide. There are two indentations below the rim. This is from a stockade near Baldwinsville, probably of the 16th century.

Fig. 196 is a heavy angular bowl, with diagonal lines and encircling rows of dots. It is $1\frac{3}{8}$ inches wide, and was found on the Seneca river.

Fig. 197 shows a small thick pipe, with expanded bowl, ornamented with diagonal lines and dots. It is $2\frac{5}{8}$ inches long, and comes from Sherman's hollow, Yates county.

Fig. 198 shows a small bowl with expanded base, having vertical ribs, but no faces. Above these an ornamented molding encircles the bowl, and the expanded rim is neatly decorated. The diameter is $1\frac{1}{4}$ inches, and it comes from Cayuga county.

Fig. 199 is an angular pipe from Farley's point, Cayuga lake, which is $3\frac{1}{4}$ inches long. The bowl is encompassed with irregular grooves and dots.

Fig. 200 is another angular pipe, $4\frac{1}{2}$ inches long, and found in Scipioville. The stem expands but slightly till half way between

the angle and the top of the bowl, where there is a sudden enlargement. This is adorned with vertical and diagonal lines.

Fig. 201 has a swollen base to the bowl, ornamented with diagonal and vertical lines. It is $3\frac{3}{4}$ inches long, and was found 2 feet underground in Owego, in 1897.

Fig. 202 is a white clay pipe from Munnsville, where the Oneidas lived. It has no heel, but in the slight cartouche beneath the bowl are the letters E. B. The form is very different from the earlier pipes bearing these initials, which have barrellike bowls and prominent heels. At the same time it differs much from recent pipes. Barrels of pipes were given to the Indians by the English.

Fig. 203 shows a pipe from Hoffman's Ferry, of quite unusual character. It is reduced in the drawing to three-fourths size, the actual extent being now $2\frac{1}{4}$ inches, but the stem has been broken. It was found on the flats of the Mohawk river, and Mr P. M. Van Epps, the owner, says, 'The dot and line ornamentation has been impressed before baking, but the work representing the mouth, nose and eyes, has been cut in the material after burning. Both sides have the face, which is cut much alike, except that the reverse has two nasal orifices.' It is quite narrow for the length, and seems an early form.

Fig. 204 has an upturned wolf's head on the margin of the bowl. The mouth is not open, and there are other examples of the general form. There are grooves around the bowl, and grooves and elliptic indentations on the stem. This is an Oneida pipe from Munnsville.

Fig. 205 is a frequent form of Cayuga pipe, easily imitated from its simplicity of design.

Fig. 206 is a human faced pipe bowl from Indian Fort, Pompey, having a head dress of dots and lines. The curved stem has been broken. Indian Fort is considered a recent site, but this pipe is of an early Iroquois type, like most relics there now.

Fig. 207 is perfectly plain, and slightly curved, suggesting that stone tubes may well have been used for pipes. It is 4 inches long, and comes from Farley's point, Cayuga lake.

Fig. 208 is a pipe bowl nearly an inch wide, found on the site of a circular stockade near Baldwinsville. The face, with its open mouth, differs little from many others, but there is a neat head dress behind this, made up of dots and lines, suggesting one in actual use.

Fig. 209 is taken from a drawing of a fine pipe found on Fort Hill, Le Roy. It is 4 inches long, and has two raised human heads on the back of the bowl, facing the smoker. The back below these has a plain surface with oblong indentations. This flattened surface is continued on the top of the stem, which is angular throughout. The front of the bowl, with its dots and grooves, is much like some other Seneca pipes. This pipe has now disappeared. From the drawing furnished by Mr Moseley it would seem that one of the heads is that of a white man, not an improbable thing at the time the pipe was made. Unfortunately this can not be determined now, and the drawing is given as made some years since.

A pipe bowl from a Baldwinsville stockade has three narrow and horizontal ellipses within a double triangle, which has the point above. The elliptic grooves represent the eyes and mouth.

A Jefferson county pipe has a beaver on the front and beneath the bowl. The top is contracted, and the marks of molding tools plainly appear. A large and thick angular bowl, with concentric interrupted grooves inclosing a 16 rayed star or flower, comes from Sacket Harbor, from whence comes also a swimming goose on the upper part of a large bowl. The bird's head is broken off. A thick and angular pipe, much like those from Cayuga, also comes from Rutland, in that county. Another from the same place has a slender stem, and an expanding straight-sided bowl with diagonal grooves and dots. It is $4\frac{7}{8}$ inches long, and the bowl is comparatively low. A thick trumpet pipe, $5\frac{3}{4}$ inches long, comes from Dexter, and a similar smaller one from Le Ray. A pipe with a very broad and flat stem, but somewhat convex above and below, is 3 inches long, and was found at Alexandria Bay. A bird pipe from the Thousand Islands, is 3 inches wide, and has grooves on the wings and tail. Some others from this county will be mentioned later.

A pipe from Binghamton has a grotesque face, with a long projecting nose. A perfect pipe has a wolf's head, with vertical grooves behind. A line of elliptic indentations runs from the head far down the stem. It is $6\frac{3}{4}$ inches long, and comes from Cazenovia. A finely polished and perfect pipe, $6\frac{1}{2}$ inches long, is from Phoenix, on the Oswego river. It has the corded ornament at the top of the bowl, interrupted by two broader grooves. The stem is more gradually curved than in most of this type.

A large pipe of red clay, from Schoharie county, has double moldings at the base of the bowl. The latter expands like open jaws. A trumpet pipe, from Stone Arabia, has grooves and dots, and a rim $2\frac{1}{4}$ inches wide. A large pipe from the Otstungo site is $6\frac{7}{8}$ inches long, and curved. A now headless goose shows its foot. The pipes there have usually long stems. A fine trumpet pipe from this place is $6\frac{7}{8}$ inches long, and has moldings. Another angular pipe from this fort, with an expanding bowl, has a raised wolf's head, turned to the front, which is unusual in so early an example. A cylindric bowl, with vertical and horizontal dots and lines, is $1\frac{1}{4}$ inches wide, and comes from Canajoharie. Another broadly expanded trumpet pipe, with moldings and grooves, is 6 inches long, and comes from Stone Arabia. Quite an odd find in clay pipes is one from Frey's Bush, which is a brown earthenware imitation of European pipes.

Oneida pipes are not rare, and fine examples of them are found in many collections, where they have become widely dispersed. They occur mostly in the vicinity of Oneida creek, and some have been described from Nichols' pond. A bowl, $1\frac{1}{8}$ inches wide, and having horizontal and diagonal lines and dots, is from Munnsville. A large bowl, having a large bear's head, with grooves and dots behind the head, is from Madison county, and is $2\frac{1}{2}$ inches wide. Another bowl, with an animal head, and grooves and ellipses on the bowl and stem, is from Munnsville, and a niched pipe comes from near the same place.

Among the odd serpent pipes is the fragment of a large bowl from Baldwinsville. The scaly folds are well worked, but are not parallel, and between them, in one place, is a large protuberance, much like an egg. Another curious bowl from the same place has

deep spiral grooves and prominent decorated ridges, suggestive of a serpent but not directly an imitation.

A plain trumpet pipe from South Onondaga is 5 inches long. An upturned bear's head, with open jaws forms the bowl of a pipe from Oneida river. There are grooves around the stem and lower part of the bowl, and vertical grooves below the jaws. Turtle pipes are usually flat, but one from the Seneca river has the head raised above the edge of the bowl, on the sides of which are horizontal and diagonal grooves.

The corded bowls are many in number, and distributed through the entire Iroquois territory, most of them being of the 17th century, and varying in unimportant details. In this, as in other instances, will be seen one great advantage of studying the Iroquois district as such, that of placing so many articles in their proper chronologic position, affording a criterion for work elsewhere. Thus a coarse and heavy clay pipe found in a grave at East Syracuse, to the fertile imagination of the reporter was of vast antiquity, and the grave a substantial structure lined with stone. The stones vanished, on investigation, and an Iroquois pipe appeared of another corded form, having a low instead of a high bowl. These corded pipes are often angular, but the bowl and stem sometimes form a fine curve, and sometimes they are true trumpet pipes.

An example of a type of pipes made in the 16th century comes from the Thousand Islands. It is quite plain, the bowl curving abruptly from the stem, and expanding but little except at the rim. This form is often ornamented with some incised figure, and the bowl is quite high.

A very pretty pipe bowl was found two miles south of Onondaga Hill. The lower half of the bowl is much expanded, and has the usual vertical divisions of this form of pipe, but they are less prominent than usual, and there are no faces between. On the cylindrical portion between this base and the four moldings around the rim are grooves and lines of dots.

The simple and almost straight pipes, often with very broad stems are found in many places. A good example comes from Oswego Falls. It is but slightly curved, and is quite thick. The dimensions

are $3\frac{1}{2}$ inches long by $1\frac{1}{4}$ wide, and it is broken on one side of the rim. Viewed from the front the sides are nearly parallel. It was little used by the eastern Iroquois.

A fragmentary bowl comes from a stockade site on the Seneca river, having several rare features. There has been a high crest of some kind, above the well-wrought human face, the features of the latter being quite prominent. The eyes have elevated and elliptic rims, and the mouth a similar rim, but more angular. The face seems to have been made separately, standing well out from the bowl. The site is prehistoric Iroquois.

The pipes with flanges on the sides of the stem, are not restricted to the Cayuga district, a fine and ornamented one having been found near the east shore of Cross lake. It is of a simple character, having only grooves and lines of dots below the rim.

Among the niched pipes inclosing human busts or faces, may be mentioned one belonging to Mr A. E. Douglass, of New York, and found in Madison county. The double arches are plain, and the face, which is of a marked character, runs up into a high point, suggesting a fool's cap.

A fine and large turtle pipe is from an Onondaga village, occupied in 1677. The upper shell forms the front of the bowl, which opens about half way down the lower shell, the animal being placed vertically. The claws and tail are well elaborated, but are under the edge of the shell. The whole surface is ornamented with groups of lines.

A curious pipe is from Jefferson county, and represents a freshwater crayfish, whose tail extends beneath the stem. One of the claws is broken, and the other entirely gone. There are rows of dots along the back. The length is $3\frac{1}{2}$ inches.

Two recent Onondaga pipes are worthy of note, both from a village occupied in 1677. A long-bodied animal encircles the top of the bowl of one, having the head and tail of a bear. Beneath the body are four broad grooves and a chain around the bowl. The head is parallel with the side of the bowl. The other has a well-executed figure of a sitting man, whose feet are on the stem, and whose hands are clasped across the knees. Grooves appear on the

man's prominent back, giving it the appearance of a very plump skeleton, but these are but customary ornaments. If it once had a head, as is probable, the fracture has been neatly smoothed and hardly appears.

Many fine examples of pipes, perfect and fragmentary, may be seen in the state collection, which is now rich in articles of this kind, through the energetic efforts of Mr A. G. Richmond, to whose knowledge of aboriginal art we owe so much. In the fine local collection of Mr Twining, made in Jefferson county, in those of Messrs Peck, Crone and Moseley, of Ontario and Genesee counties, will be found specimens which will elicit admiration. A few of these will be shown from photographs, partly because they have features so remarkable, in some cases, that no suspicion of artistic fancy should rest on their reproduction. In all the illustrations in these bulletins accuracy has been aimed at, but a photograph will remove any lingering doubt, should such exist in the minds of any. These plates are reduced.

Fig. 210 is of a pipe from Genesee county, where a combination is occasionally met with in a somewhat different way. A man's head faces the smoker, and above this, on the other side of the bowl, is an uplifted animal's head. There are the usual grooves, and an arm or leg appears below the animal's head. The pipe is black, and quite angular, and is $5\frac{3}{4}$ inches long.

Fig. 211 is one of the most remarkable pipes in the collection, in some ways, and comes from Mr W. L. Stone's collection, mostly made in Saratoga county, or in that vicinity. It is commonly known as the Washington pipe, and as the full resemblance depends on little things the aid of the camera has been called in that every minute detail might be supplied. The figure of a sitting man forms the bowl, the bust out of proportion to the lower parts, but art requires some conventionalism. The head is fine, the hair full, and gathered into a cue which hangs low down on the back. In some points of view the resemblance to Washington is very striking, but it is a type of pipe anterior to his day by nearly 100 years. The head is characteristically European; the work that of an Iroquois. We need not be surprised at this. If the native artist could

imitate one thing, he might another, and that he did figure European animals, articles, and in some instances men, is very plain. The wonder, therefore, is not so much in the European head and hair, as in the suggestive likeness found in this case. Otherwise the style is that of the 17th century, and some French or English officer probably called forth the artist's admiration. It is $7\frac{1}{2}$ inches long.

Fig. 212 is a fine and curious pipe of brown clay from Jefferson county. The rim is broad, contracting beneath. The expanded base of the bowl is handsomely engraved, above the large and plain stem. The general style is rare.

Fig. 213 is a fine and unique pipe from West Bloomfield, and is $7\frac{7}{8}$ inches long. It is of black clay, and has grooves around the top of the bowl. Two serpents raise their heads above the front of this, their bodies following the curve of the pipe below the stem, under the bottom of which there is a long groove.

Fig. 214 is a dark colored pipe from Genesee county, of what is known as the Huron type of Canada, but which is also found on early Mohawk sites late in the 16th century, as well as elsewhere. The bowl is angular, with deep elliptic and curved indentations, and long grooves and lines of indentations extend along the curving stem. It is one of the best examples of this well-known form, and is $4\frac{7}{8}$ inches long.

Fig. 215 is another pipe from West Bloomfield, and is of a grayish mottled clay. The length is about $4\frac{3}{4}$ inches. A squirrel occupies the front of the bowl, raising its head above the edge.

Fig. 216 is a spirited pipe from Honeoye Falls, near which were early historic Seneca sites. A man crouches on top of the bowl, with folded arms, facing the smoker. Grooves cross his body and limbs, he wears a small round cap, and might be taken for one of La Salle's sailors rather than an Indian. There are four grooves around the stem near the center. The extreme length of this fine pipe is $6\frac{1}{4}$ inches.

Fig. 217 is a remarkably long pipe from the same place, being a trifle over $9\frac{1}{2}$ inches in length. It is black, like many other pipes from that region, and has a fine eagle on the top of the bowl, the

head being very large, as in all such cases. There are horizontal grooves on the throat, and two rows of flutings on the upper side of the long stem. It is the longest clay pipe yet reported.

Fig. 218 is another unique pipe of reddish clay, from Jefferson county, $5\frac{1}{2}$ inches long. There are grooves and indentations on the front of the bowl, and lying obliquely on the top toward the smoker, is what might be termed a quartered shield, divided by groups of lines running in various directions.

Fig. 219 is another still more remarkable pipe, where the unanswerable testimony of the camera will be found of value in point of detail. This peculiar pipe is from Jefferson county, and is suggestive of many things. What bird is represented? When was it made? Mr Twining, who obtained the pipe from Sandy Creek, thought it a parrot, and the thick, curved beak naturally suggests that bird, but is not sharp enough. It has full as much resemblance to the flamingo. The Iroquois, however, seem to have known nothing of the parrot till they extended their wars southward, after the downfall of the Eries in the middle of the 17th century. Yet they were kindred to the Eries, the Massawomekes, and the Tuscaroras of the south, and thus might have known something of southern birds at an early day. On the other hand, nearer home, this head may have been but an exaggeration of the thick bill of the coot or some other member of the duck family. Accurate likeness of anything it certainly is not, and something is exaggerated, though we can hardly say what or how much. One northern bird might put in a strong claim, the razor-billed auk, which at times frequents the Gulf of St Lawrence and the New England and New York coasts. It comes nearer to this peculiar outline than any bird now recalled, and the early Iroquois reached its haunts.

As to when this pipe was made we have no certain dates. It was found in a region peopled by prehistoric men of the Iroquois family, though it might have been lost in later days. The character of the pipe, however, suggests the 16th century, at which time the Iroquois lived at peace on the St Lawrence, certainly as low down as Quebec. They went much farther. Thus it is prob-

able they came in contact with a northern bird more exactly filling the requirements than any southern one that can be named. The likeness was not a success. Besides the deep bill this pipe has the raised eyes frequently found in pipes of the 16th century, while the grooves and dots on the front of the bowl attest its Iroquois character, although made before the league was formed. The length is nearly $4\frac{1}{2}$ inches.

Fig. 220 is another curious and probably early Jefferson county pipe. The singular decoration on one side of the face has been called a military hat, and was probably suggested by a head dress of some kind. There are the usual grooves on the front of the bowl, and a face appears toward the rear, on one side of which is a broad half-circular appendage, ornamented with dots and indentations neatly arranged. Dots appear about the face. It is not a large pipe, being about 3 inches long.

Fig. 221 is another odd pipe from Jefferson county, which has lost part of the plain and curved stem, and is now hardly $3\frac{1}{2}$ inches long. The bowl is oblong, having some resemblance to a blacksmith's anvil at the broad and unequally projecting rim. In the center of the bowl is an expansion, with vertical grooves and dots, and faces in relief before and behind. This part varies but little from some other forms, but the projecting rim is a striking feature.

The Iroquoian character of the early inhabitants of Jefferson county, in the main, plainly appears from many of their pipes, and while some of these are of an earlier type, many of them can scarcely be distinguished from those of the 17th century. There are reasons for supposing the early Onondagas came thence about the time of the beginning of the long Huron war, as the Mohawks left the St Lawrence at the same time. About that time, also, several novelties were introduced into pipe-making in New York, as well as in the decoration of earthenware. The evidence for this is clear. One reason for this was in the change of location; another in the new and close contact of the several nations who met to form and perpetuate the Iroquois league; another still in their adoption of foreign captives, who brought new arts to the homes of the victors. The change affected the Cayugas and Senecas less, because

they retained their old homes, while the Mohawks, Oneidas and Onondagas began a new life amid new scenes.

The state collection has a very good representation of pipes of clay and stone from Jefferson county, and there are several detached heads from the former, showing that one style, prevalent in other places in the 17th century, was also made there, and probably not long before. The fine owl's head bowl appears, and the trumpet pipe in a simple character. Two raised angles on the rim of some bowls, connect this with Onondaga county. Some massive trumpet pipes, with an abruptly projecting rim, differ from most of this type. The open-mouthed serpent forms a conspicuous and characteristic bowl, and the corded bowl has a less typical representation. One fine clay pipe has a human face turned from the smoker. In general, however, this early feature is preserved by placing such faces on the back of the bowl; and where these are human faces they are usually large and grotesque. There are several fine examples of these, and they are found in other collections. They might be called the typical pipe of that extensive field.

Mr A. E. Douglass did not classify his pipes by material, but out of 375 he had 43 from New York. Ohio came next with 40, and then Tennessee with 39. He gave no list of earthenware.

MISCELLANEOUS

Excepting tobacco pipes and vessels of clay, the articles of earthenware made by the New York Indians were very few in number, and some of these were adaptations from those which had been broken. Most of the small disks or counters were chipped out of potsherds, and some detached heads may have come from broken pipes. This is not always the case, but the number of articles showing original design is so far surprisingly small.

Fig. 222 shows the largest clay disk as yet reported from New York, and it is in the state collection as one of the articles in Mr Twining's fine array of relics from Jefferson county, where most things are of prehistoric date. A large fragment of pottery has been cut into an irregularly circular form, and perforated near the center. From this perforation 11 incisions radiate to the outer edge. The secondary work is clearly seen, as it is in simpler ex-

amples. Such disks, perforated or not, but usually smaller, occur sparingly on many early Iroquois sites. They scarcely survived the coming of the white man.

Fig. 223 shows one of several of the more common form, found at Schenck's Gulf, east of Palatine Bridge. The perforated forms, which are more frequent in Canada than here, were called *terra cotta* beads by Sir J. W. Dawson. He was probably in error, judging from his figure, in saying that 'a cheaper kind of bead was made of clay, molded into ornamental discs and baked.' Molded clay beads, however, do exist, though his example is of a different kind. The large perforated disk, before figured, was probably used like the shell and stone gorget, and secured by a knotted cord drawn through the hole.

Fig. 224 is a neatly cut disk, made from a potsherd, and comes from the Onondaga fort of 1600, west of Cazenovia. Similar specimens are not rare there. This one has the edges smoothly cut, but they are usually less neatly worked.

Fig. 225 is from the same site, and is one of the best examples yet found, being smooth and symmetrical, and apparently the original design. The edges are neatly rounded, and it is thicker than the usual form. It might have been used in some game, but we know of none at that day requiring an article of this kind, though some purpose it would seem to have had.

Fig. 226 is a peculiar *terra cotta* mask, found at Cold Spring, Putnam county. It is of so marked a character as to have called forth shrewd surmises as to its origin, and presents such a finished appearance in full view as to lead some to think it complete in itself. The owner, however, Mr James Nelson, of Cold Spring, says 'The back shows that it has been attached to something.' It may therefore be placed with those fragmentary figures from pipes so often found. A large number of fine articles of this nature might be figured, both early and recent.

Fig. 227 is an odd relic from the mouth of Canada creek, near Rome. It seems intended for a rude representation of the human face, with circles for the eyes and mouth, and a long groove for the nose.

Fig. 228 is a small terra cotta head, much like the next, and comes from an early historic site south of Delphi. It does not seem to have been part of a pipe, but is much like a curious article described by Sir J. W. Dawson in his *Fossil men*, from Montreal. Of these he said, 'The Hochelagan women, however, had a very ingenious contrivance for hanging their pots over the fire, which deserves notice. They had no doubt found by experience that when an earthen pot was hung over the fire by strings or withes tied to the outside, the flames would sometimes reach the perishable means of suspension, and, burning it, allow the pot to fall, and its contents to be lost. Hence they contrived a mode of fastening the cord within the throat of the vessel, where the fire could not reach it. This hook for suspension was made in the shape of a human head and neck, the hole for the cord being left behind the neck. Many of these heads were found detached, and their use was not known till the fragment illustrated was found.' This Onondaga fragment may be of this kind, but the practice could not have been common. The simpler method of inserting a stick too long to be withdrawn when turned horizontally, as a point of attachment for the cord, would satisfy most Indian housewives. Certainly, in New York, detached heads suitable for such uses are rare.

Fig. 229 much resembles the last, but is larger, and more suggestive of use on a pipe. It is from Jefferson county.

Fig. 230 is much more recent, but comes from the Onondaga town of 1654. During its later occupancy European pipes found their way there, and perhaps even at an earlier day. The material was rare as yet, and the thrifty Onondagas, 'men of business,' as a later French missionary called them, saw a possibility of an ornament in the broken pipe stem of the white man. If slender, it was needful only to smooth the ends; if thick and heavy, it might be carved and made more ornamental still. The white and carved pipe stem here shown is of unusual thickness, but early pipes varied greatly in this. It has been cut in several ways.

Fig. 231 is of a generally rectangular form, though each edge is slightly convex. It is beveled from the central square on each side, and grooves appear on every face. It could hardly have been

used as a personal ornament, and there is no game known to which it can be assigned, unless it might be that of the moccasin, where an article is hid in one of three shoes by one party, to be found by the other. It seems most reasonable to infer that similar articles may have been used in some game.

Fig. 232 is unmistakably a complete article, found on the Nellis farm, near Canajoharie. It is a neatly made bird of the hawk family, broad-shouldered and with folded wings. It shows a perforation by which it might be suspended or worn. A conjectural use would be that of a token or amulet, such as we know were sometimes kept by the Iroquois, much like the medicine of other nations.

Fig. 233 suggests a similar use, though of a different kind. It was found on the Oneida river about the year 1840, and represents a recumbent lamb with a raised head, in terra cotta, although the ears suggest an animal of a very different nature. If the first form be allowed, it might be considered the Agnus Dei of some devout Iroquois convert, but both the identification and use are uncertain. It is quite probable that the Iroquois then knew little of living lambs, while quite familiar with their representations. In any case, this figure had probably some sacred use.

Fig. 234 is a fragment of what was apparently a large and pretty disk, ornamented both on the edges and sides in sweeping lines. It is of a light mud color, and was found at Drewerton. So little is left of it that its true form and use can not now be determined, but no secondary work appears on it.

Fig. 235 is a head from a recent Cayuga site near Mapleton, and the projection over the eyes, as well as the general character of the head dress, gives the impression of a helmet of steel. Caps of similar kinds are more common among the Cayugas and Senecas than farther east, as they longer maintained their primitive arts. The cock's and boar's head are among other examples of their terra cotta work.

Fig. 236, *a, b, c, d, e, f*, show Cayuga clay beads and pendants; *a* being a thick disk bead, *d* an oblong one, and *e, f*, two which are spherical. Two clay pendants appear in *b, c*. These are nowhere common.

Fig. 237 is a clay bead from Rice's woods, a recent site east of Stone Arabia. None have been reported from the Onondagas and Oneidas. Shell beads were more to their liking when they could be had. Early antiquaries spoke of them in the Seneca territory, and Dawson says that on islands in the St Lawrence, 'In addition to jars and pipes, the only frequent objects of earthenware are small discs, perforated in the center and crenated at the edge. They may have served as an inferior kind of wampum, or beads, or perhaps for the playing of some game of chance.' It may be added that while there are many disks made from potsherds in the Toronto collection, Mr Boyle says nothing of true clay beads, and Dr Rau mentioned neither in his report on the Smithsonian collection.

Fig. 238 is a clay disk from Tribeshill, perforated, and with the edges of the hole slightly raised. Its form is very near a true circle, and it will be readily seen that this is the original design. The age is uncertain.

Fig. 239 is a very pretty disk of unusual character, found a quarter of a mile above the bridge at Canajoharie. It is not perforated, but there is a circular indentation near the center, whence six grooves radiate like a star. These are connected by concentric grooves, four in number. The edge is crenated, and the whole effect pleasing. Its use is conjectural, but it is quite likely the Indian who made it had seen circles and six-pointed stars laid out with compasses, though he did not use them on this.

Fig. 240 is a wolf's head of clay, having almost a yellowish glaze. It was probably part of a pipe, but is remarkable for its high finish. It was found at the recent stockade south of Delphi. Many pipes of that period have well polished surfaces. It may be added that all these miscellaneous figures are of actual size.

In one detached human head from near the mouth of Oneida creek, where a crest crosses the head longitudinally after the manner of the *Cheveux-relevez*, the small and protuberant eyes are darker and more polished than the face, and have the appearance of inlaid beads. The head, however, probably came from a pipe. The boar's head sometimes occurs, as that animal soon attracted attention, not always favorable. When the Mohawk chief, Kiotsaeton, addressed

the French governor, July 2, 1645, urging him to make a settlement in the Mohawk country, he said, 'Leave these stinking pigs, which run among your habitations, which eat nothing but what is filthy, and come and eat of good victuals with us.' A small boar's head from an Iroquois site in the Seneca country is very accurately worked out, and has also the remarkable feature of being hollow. The Senecas alone seem to have made heads in this way.

It will thus be seen that New York aboriginal work in clay took a very narrow range outside of pipes and pots. Small amulets, disks and beads comprise nearly everything that was made, and examples of these are few in number. The reason is obvious. Pots and pipes of necessity being made of clay were often finely adorned; for mere ornament they chose more showy and less fragile materials.

Fig. 147*a* is inserted out of its proper place, and is somewhat reduced, being $2\frac{1}{8}$ inches long. It is a curious article, broken at the broad end and sharpened at the other. It is a little wider the other way. In appearance it is precisely like the frequent punches made from sharpened prongs of antlers, but is of clay, the neat pointing having been made before burning. Its purpose, of course, was the same as that of the horn punch, but why clay was used when horn was abundant is a puzzle. The owner thought it the leg of a pot. It was found in the vicinity of Canandaigua lake, and its occurrence suggests how many odd forms may come to our knowledge through closer observation.

A general view has thus been given of aboriginal work in clay in New York. It is necessarily somewhat summary in treatment, leaving out many fine pipes, specially, because these are so many that typical examples alone can be given. In the hard work of cataloguing, Mr Richmond has never lost sight of making notes of place and history, whenever possible, an indispensable feature in study of this kind. Future students will appreciate what has been so faithfully done, and the New York collection will have a value altogether above the beauty and variety of its articles. The aid of all is asked in making it more complete.

ADDENDA

It is expected that additions will be made to the types of articles published in these preliminary bulletins, and these may be occasionally noted. One of interest is an obsidian leaf-shaped knife, $2\frac{1}{2}$ inches long, recently found on the Seneca river, being the first one reported in the state. One had been found in Pennsylvania before this, but otherwise this material is not known in the east. It is thus a notable find.

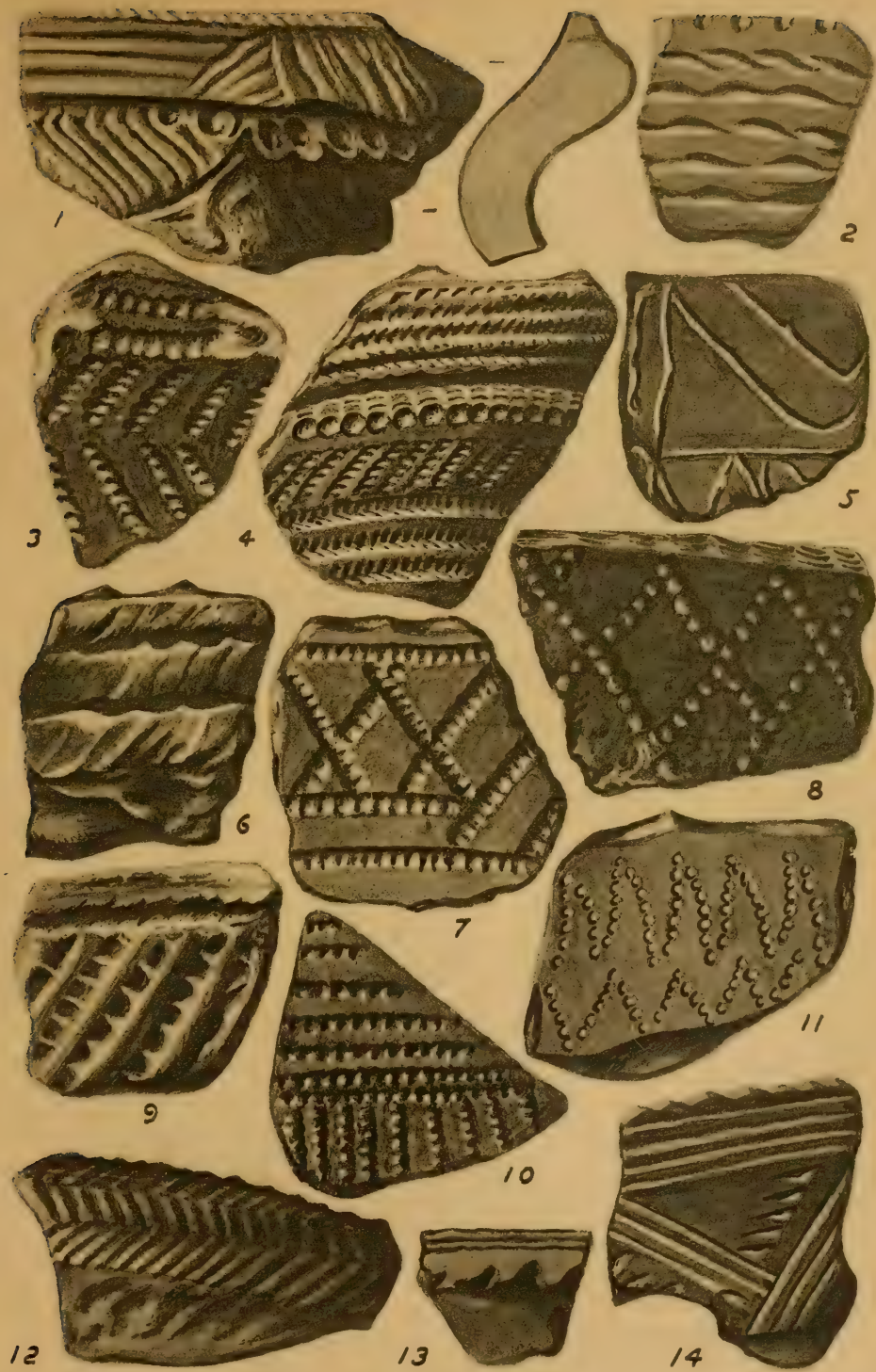
Among articles of polished stone is a rare form of wide distribution in Ohio, one of which has been found in Canada, and now one appears in the state collection at Albany, having been found in Genesee county. It is a spherical piece of striped slate, with a large perforation smallest at one end. In this one the stripes run around the stone, which is a little over 2 inches in diameter. The peculiarity is a longitudinal groove in one side of the stone, the edges being neatly rounded.

Another notable article is a tapering cylindric granite pestle from Canajoharie, belonging to Mr Richmond. It is $26\frac{1}{2}$ inches long, and $2\frac{1}{2}$ thick in the largest part. About $3\frac{1}{2}$ inches from the small end it is perforated. One of Mr Richmond's recent acquisitions is a beautiful and unusually long stone pipe of greenish gray slate, from the town of Palatine. It is 9 inches long.

Two large grooved boulders from Onondaga county have been placed near the cases at Albany. The straight uniform grooves in these are commonly supposed to have been used in arrow making. In one of the cases is a flat pebble similarly grooved, which comes from the Genesee valley. This article has not been reported so far west before, nor are small ones anywhere common. This is 6 inches long by $2\frac{3}{4}$ broad. Usually they are large stones, not intended to be moved.

From the Cayadutta site Mr Robert M. Hartley, of Amsterdam, has a small ornament of slate, less than 1 inch in extent, of the general figure of the butterfly banner stones, but it probably belongs to a very different class, although strongly suggestive of this. In any case it is of much interest, as are some other small slate ornaments found at the same place.

An examination of a collection in Jefferson county, near Watertown, shows curious forms in pottery. The narrow projecting angles of some vessels extend outward $2\frac{1}{4}$ inches, and may have served for handles. Two examples of open handles occur, but of different forms. There is one small perforated disk. Several pipes of the Jefferson county types have recently been found in Onondaga, and the early relations of the two groups are now more distinct.





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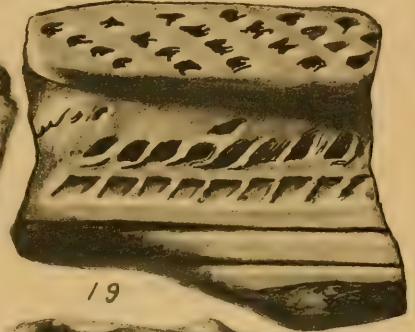
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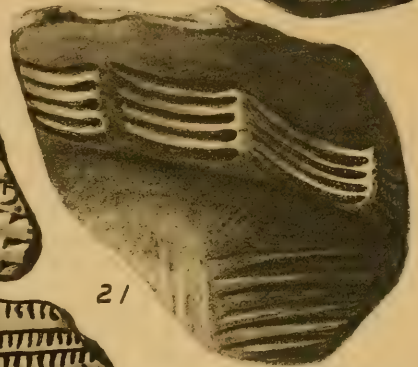
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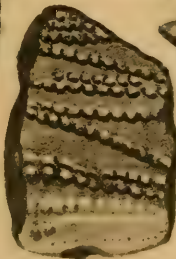
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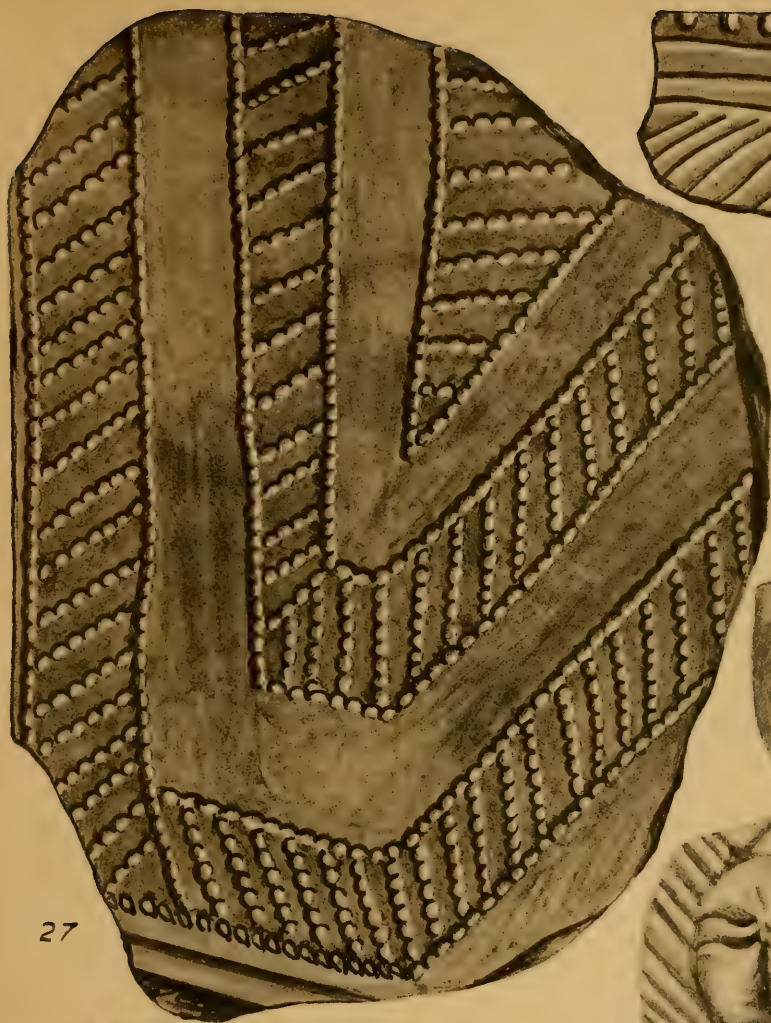
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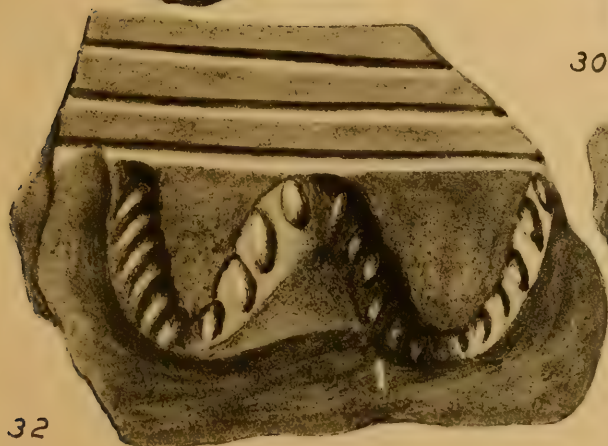
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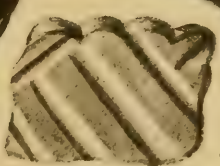
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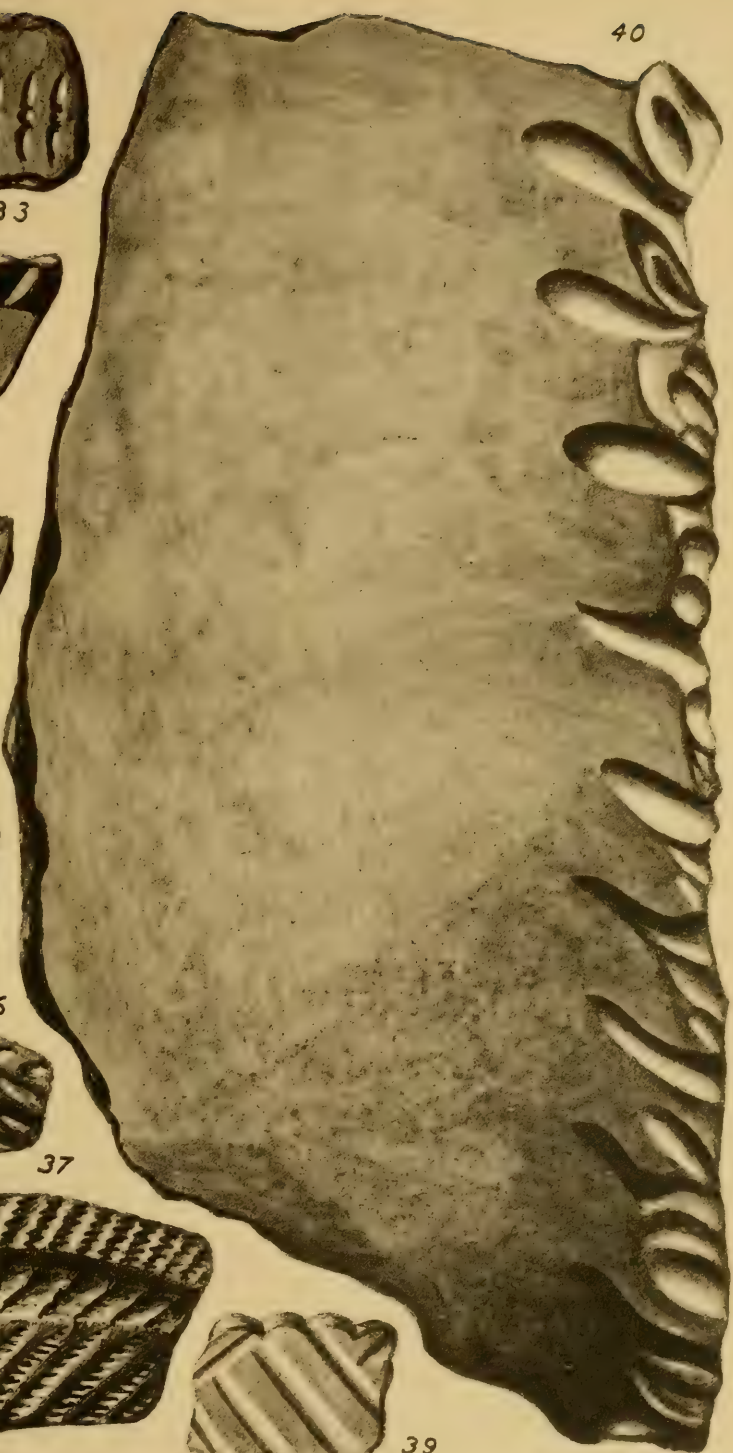
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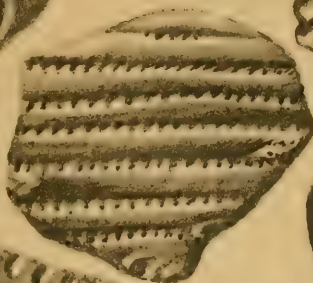
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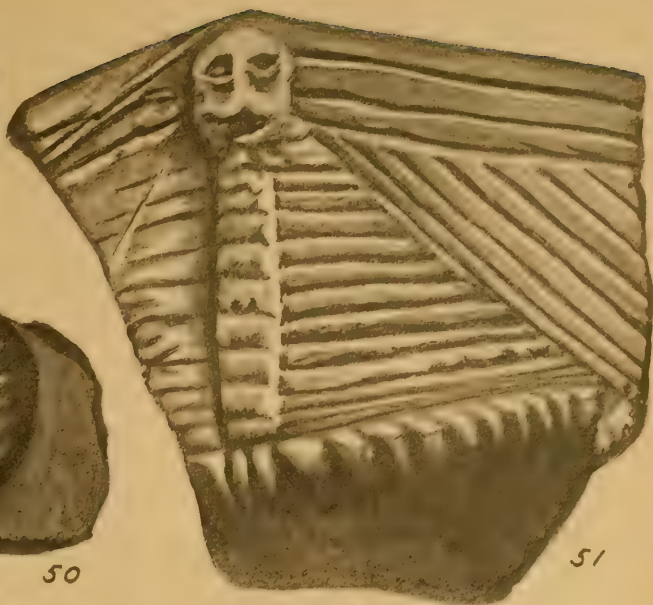




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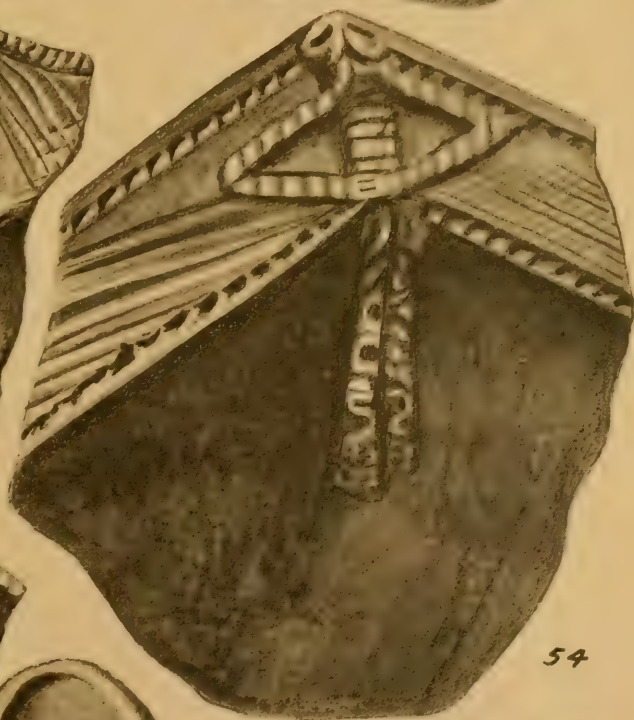
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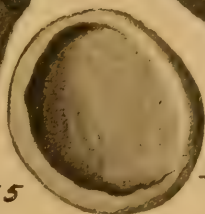
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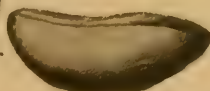
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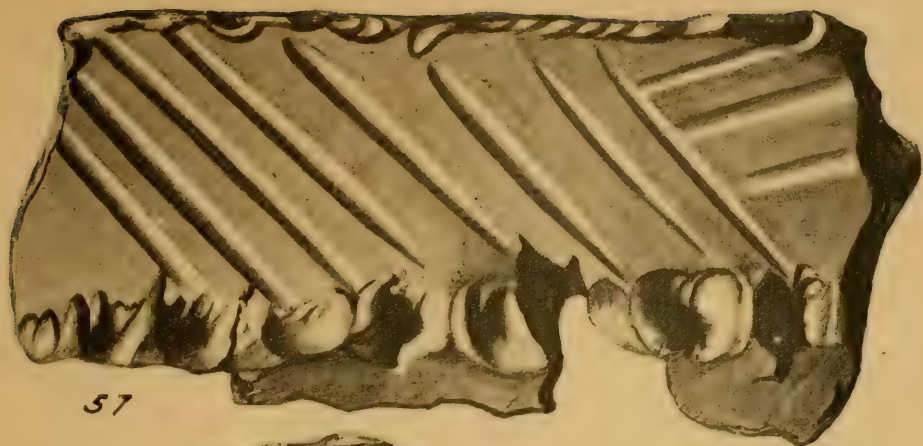


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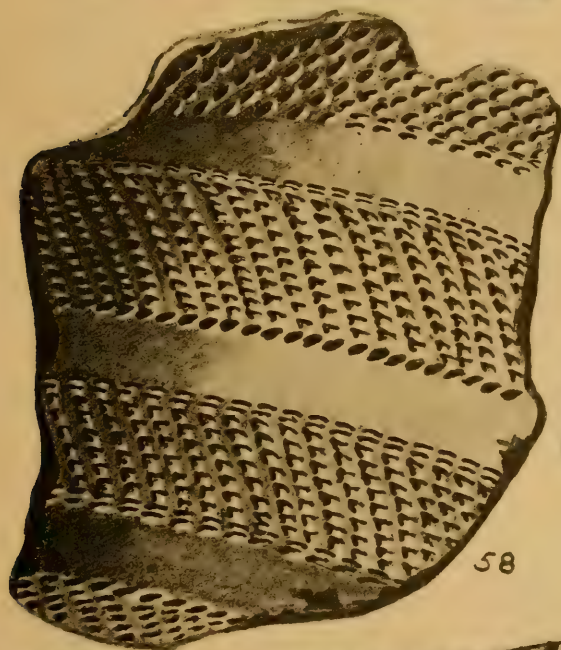


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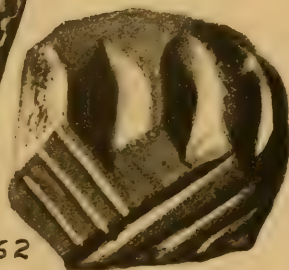
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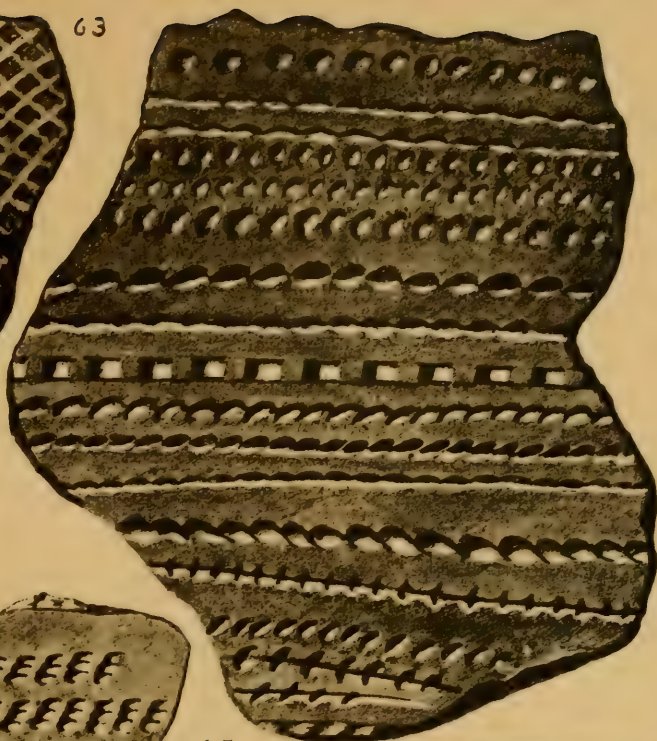
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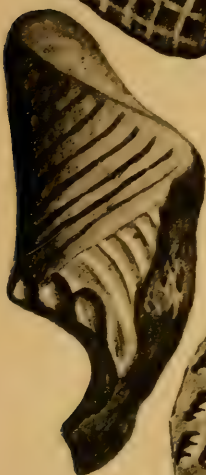
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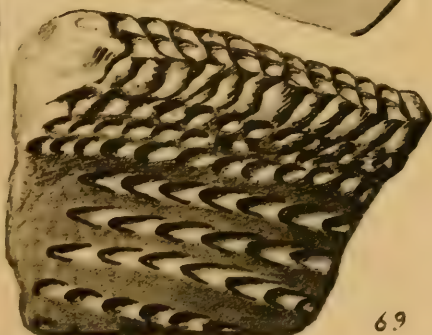
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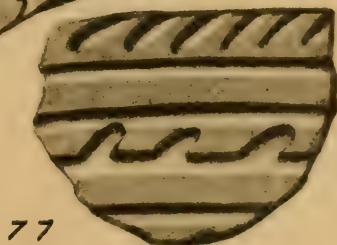
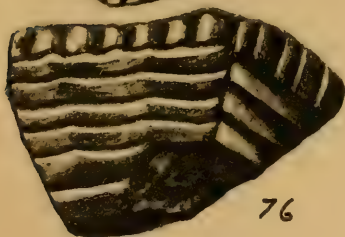
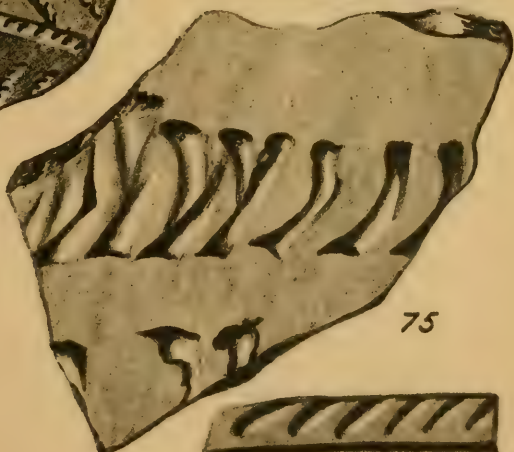
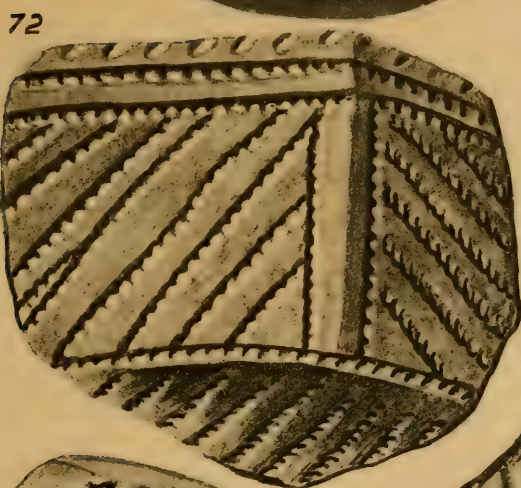
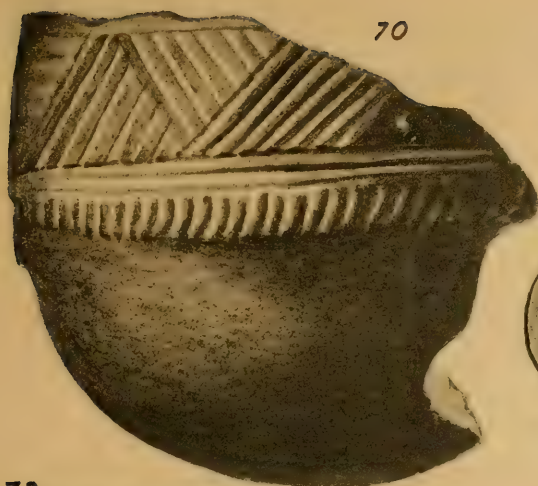
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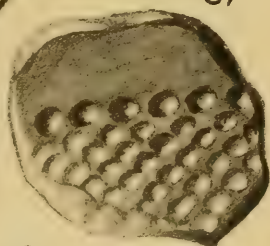
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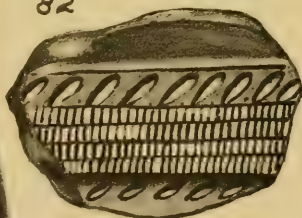
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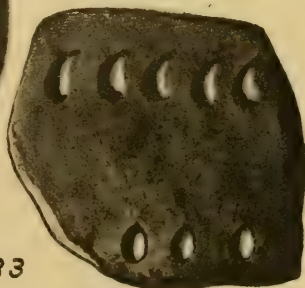
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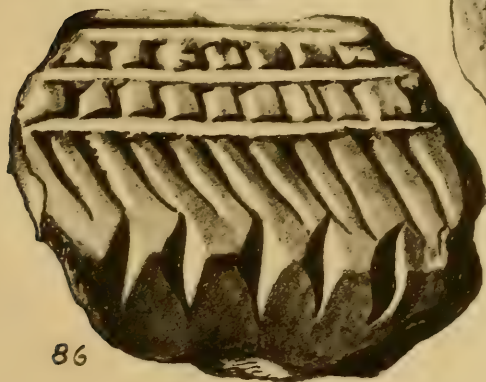
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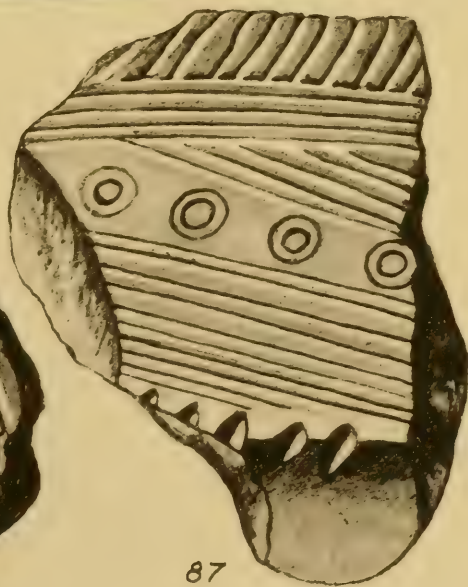
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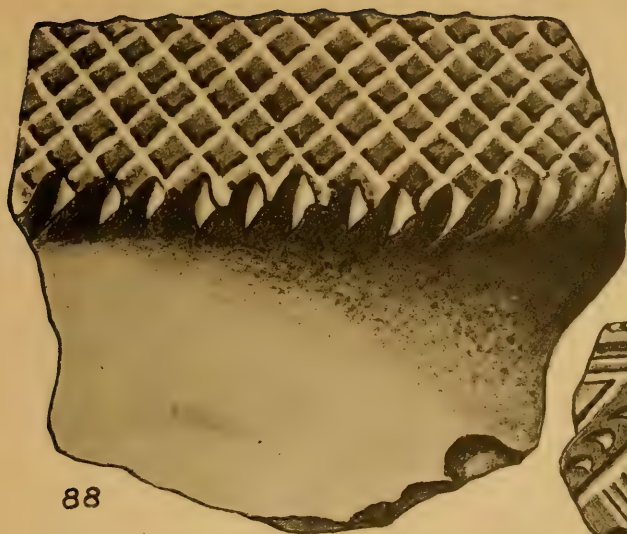
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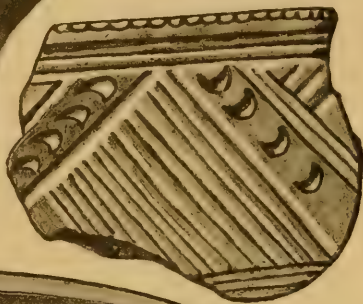
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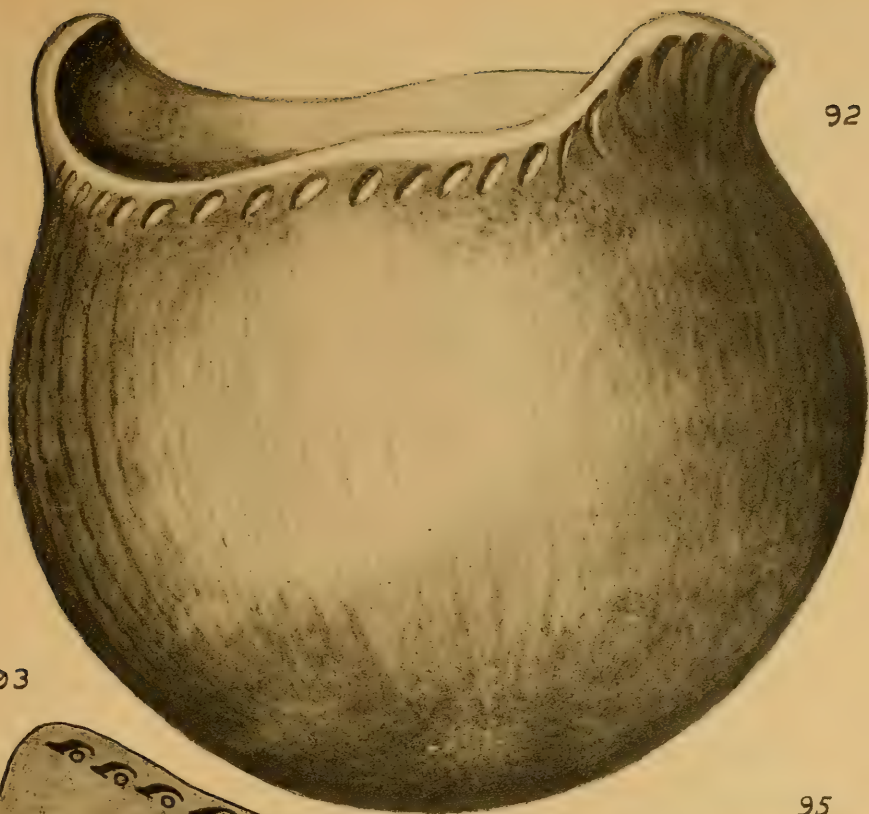
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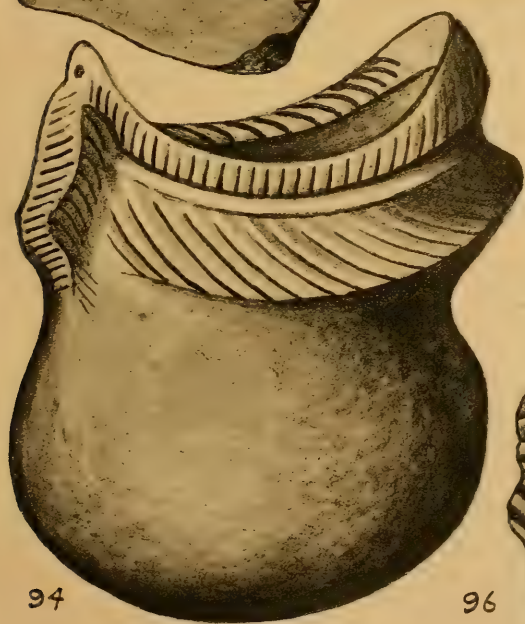
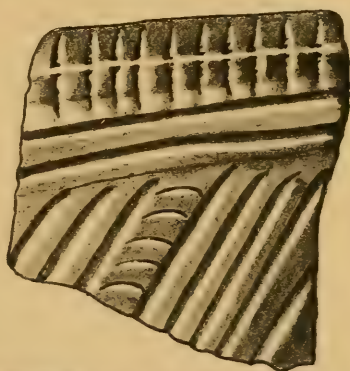


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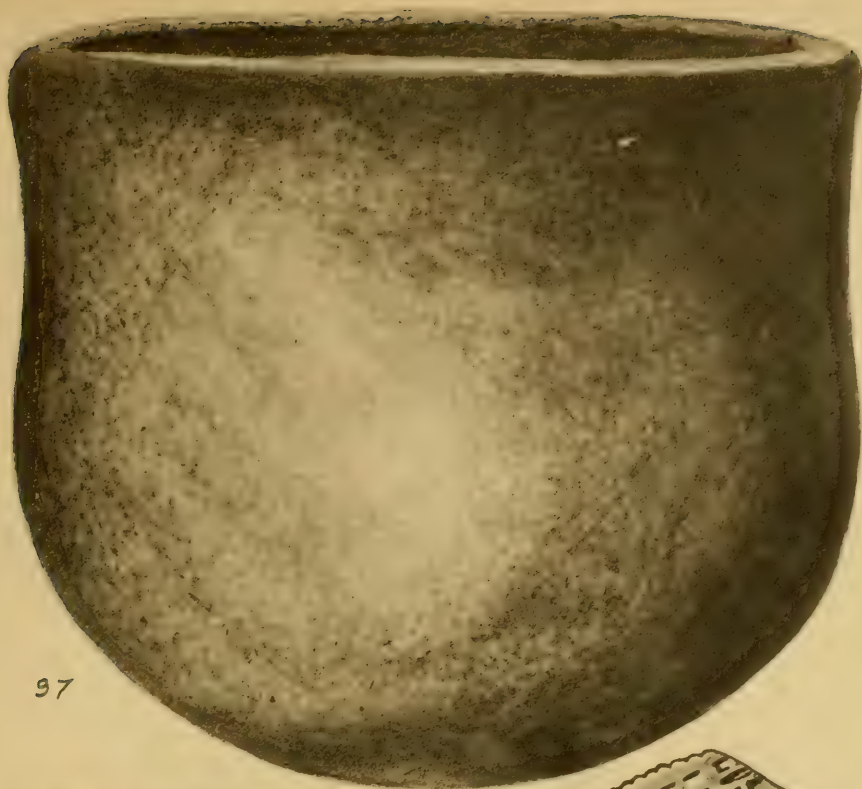
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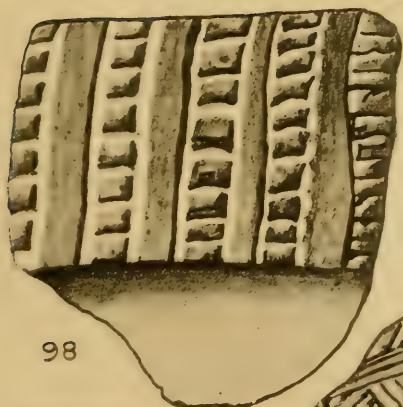
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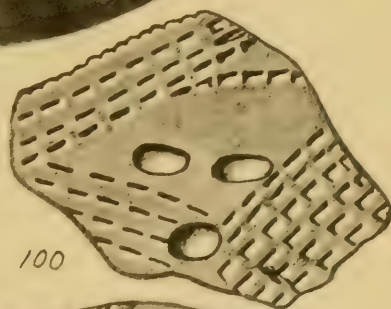
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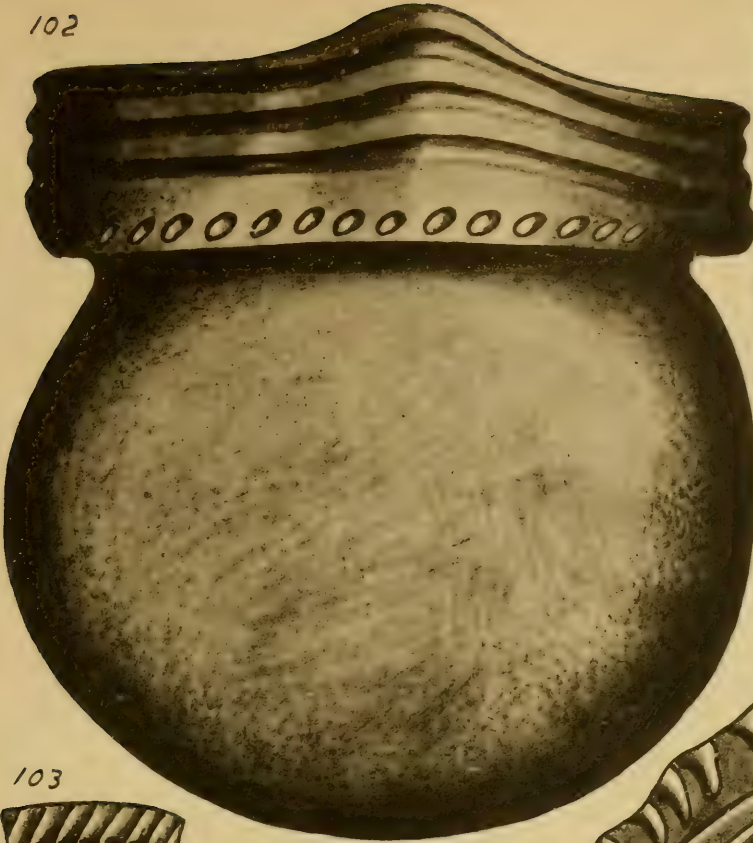


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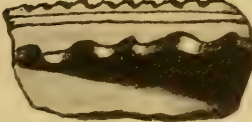


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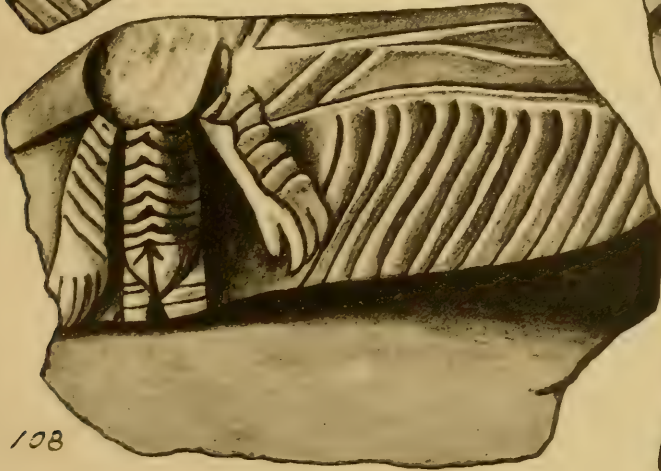
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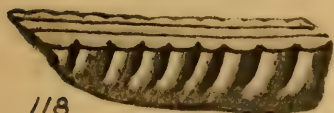
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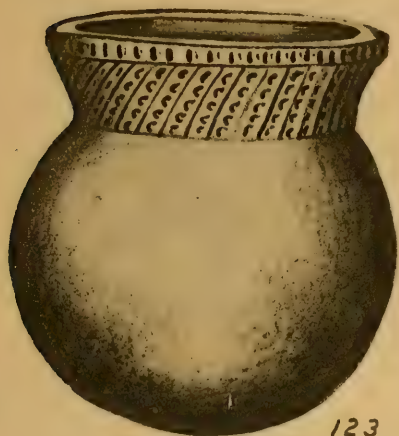
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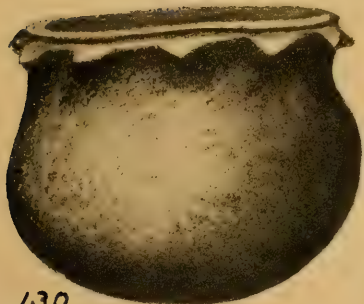
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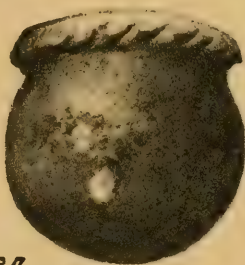
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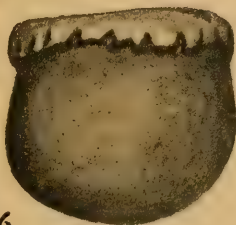
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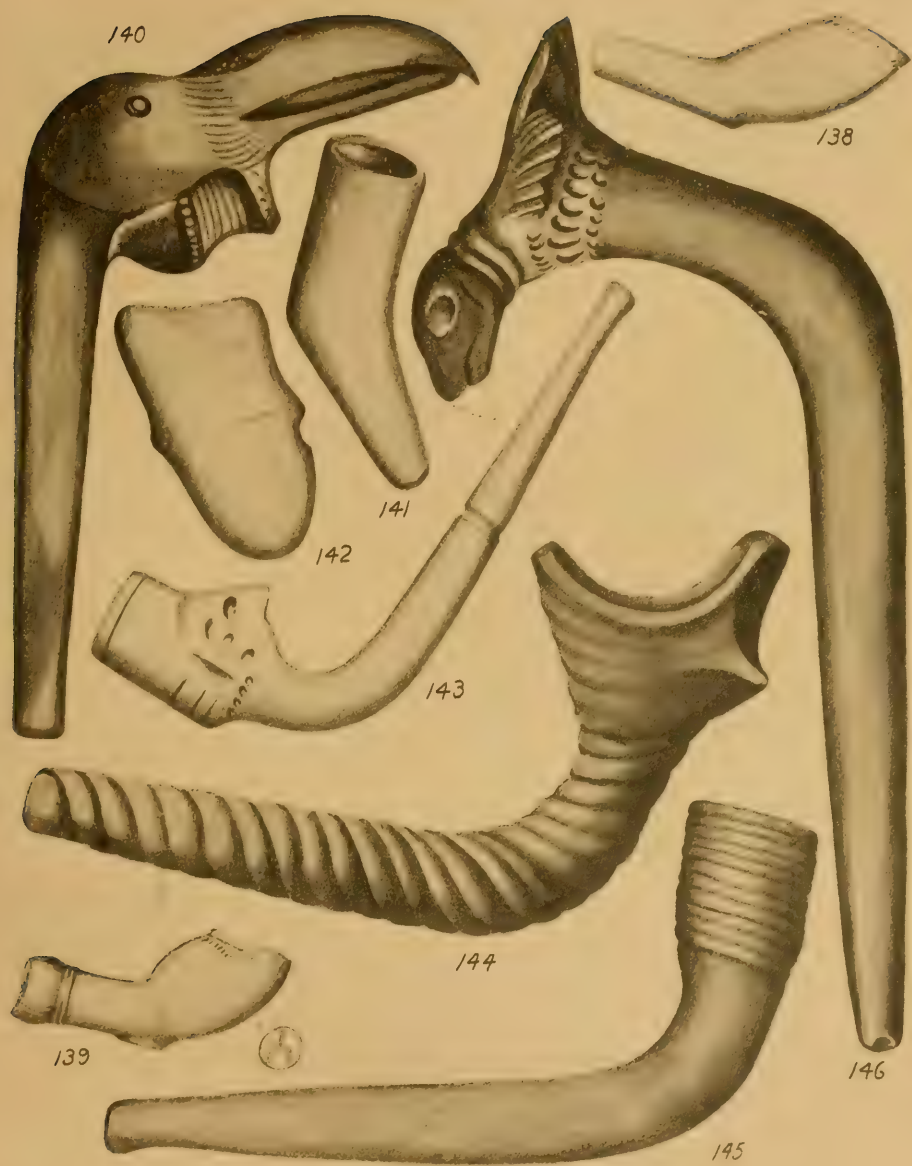
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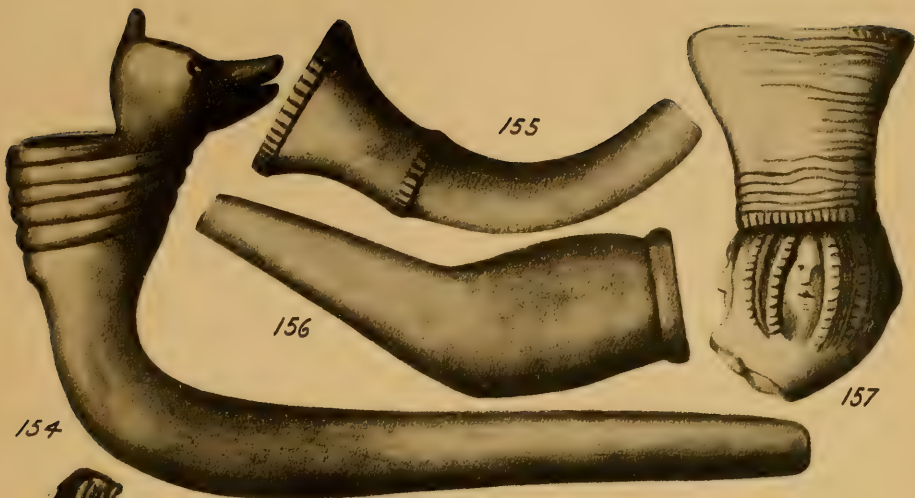
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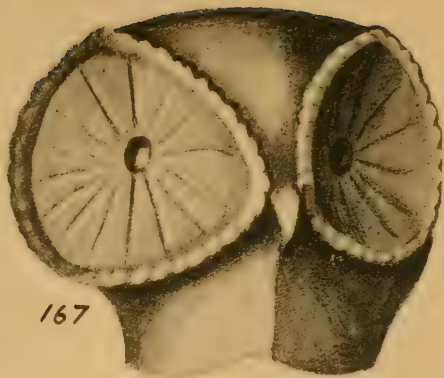








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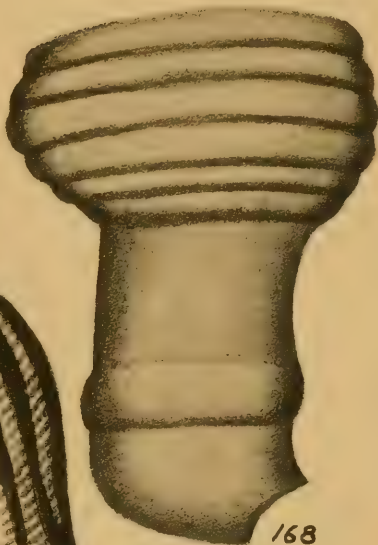
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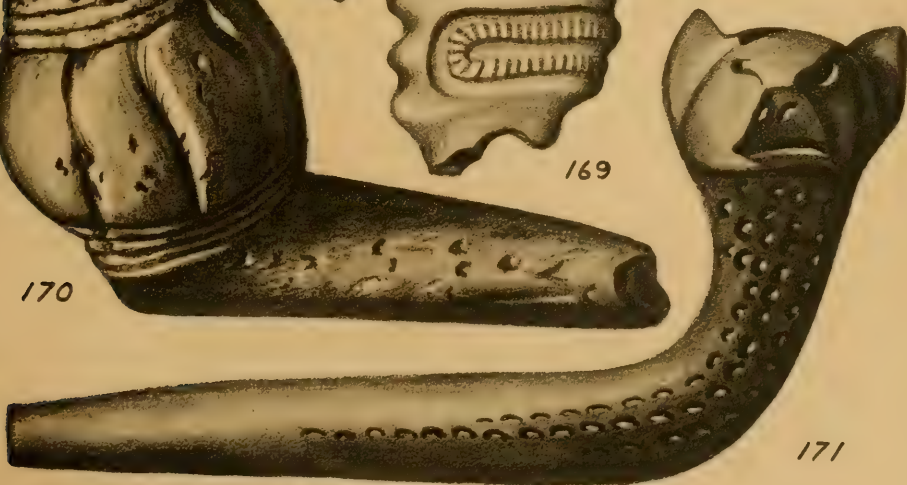
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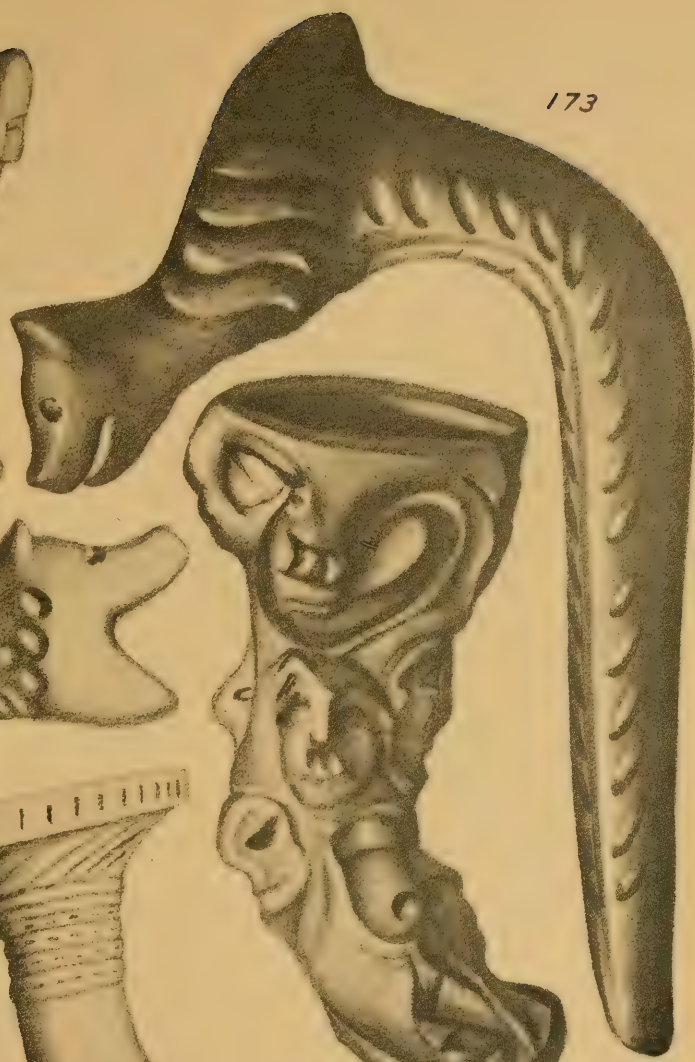
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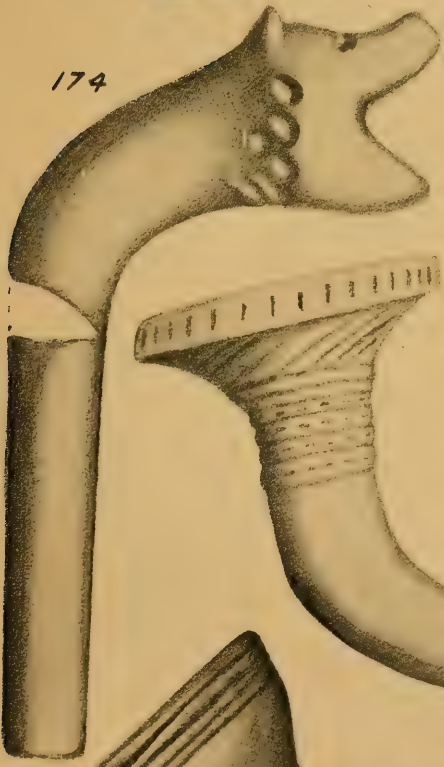
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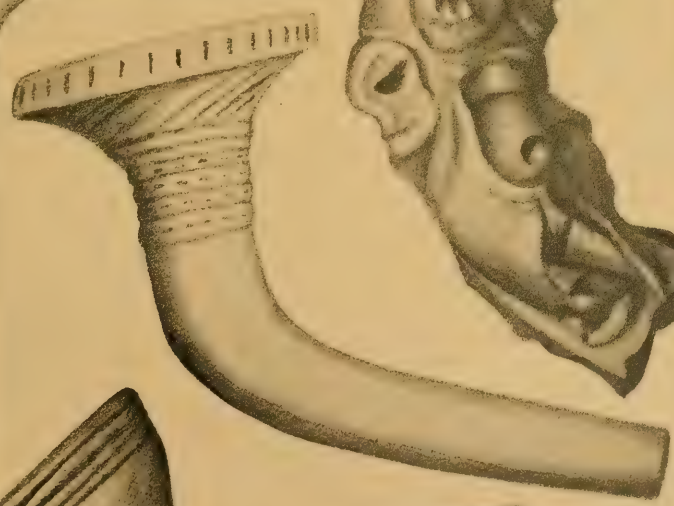
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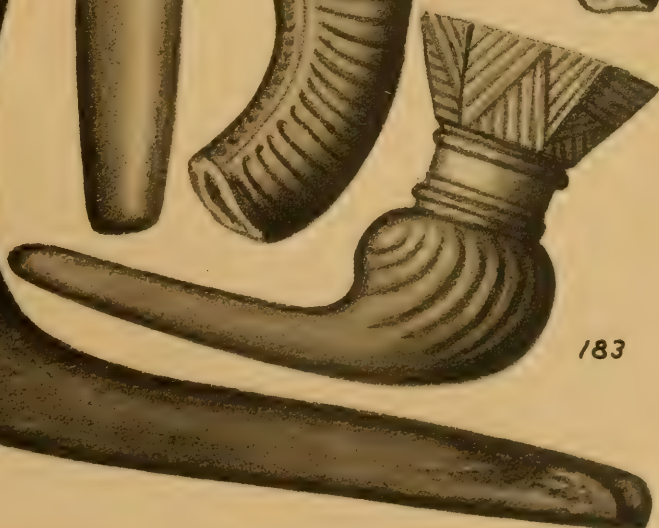
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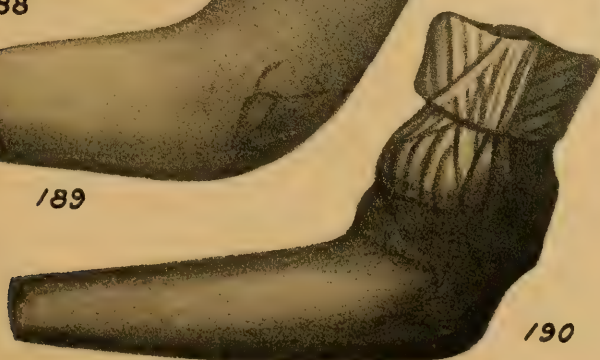
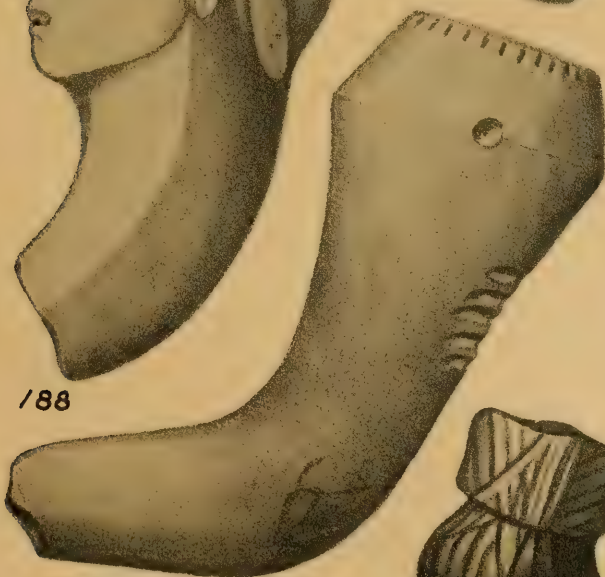
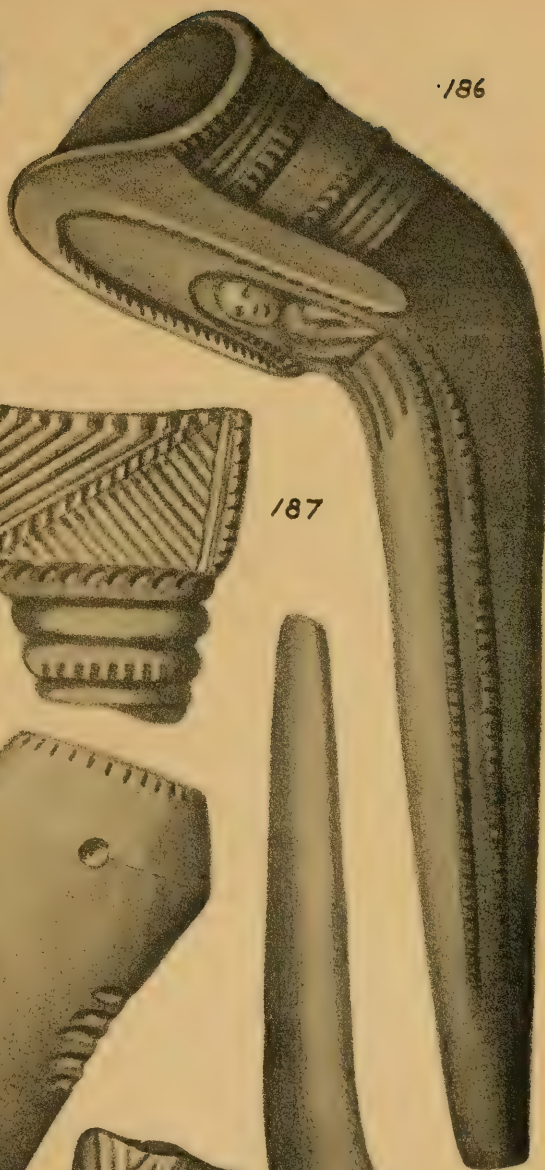
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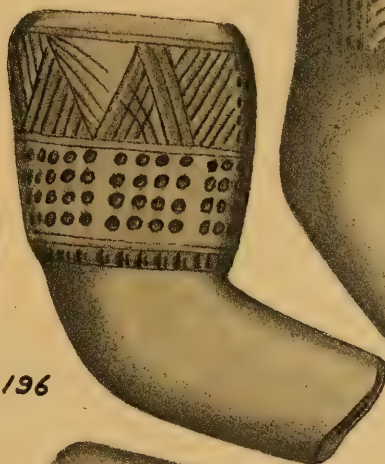
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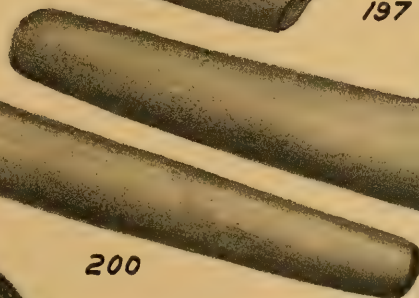
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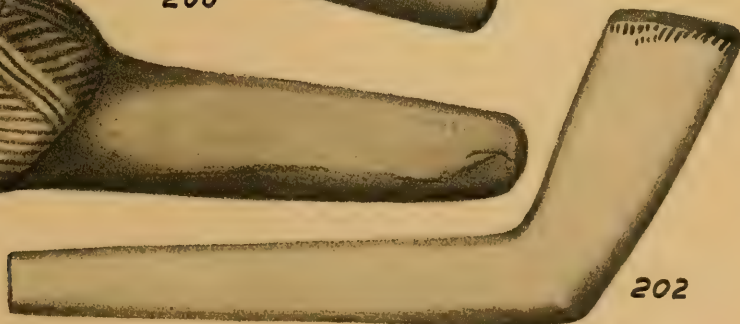
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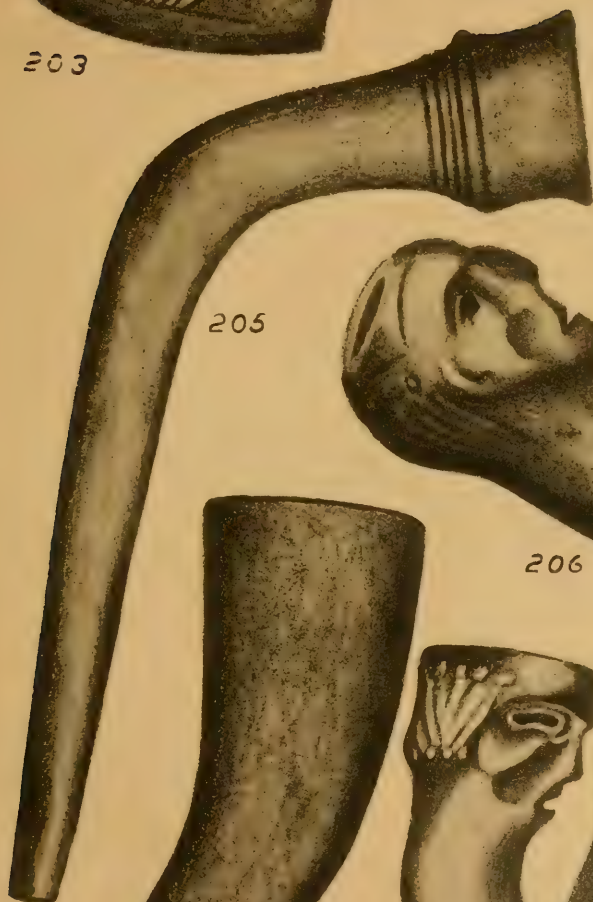
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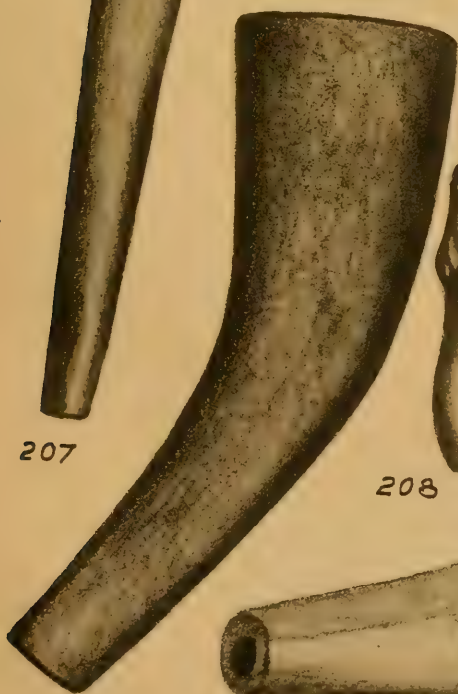
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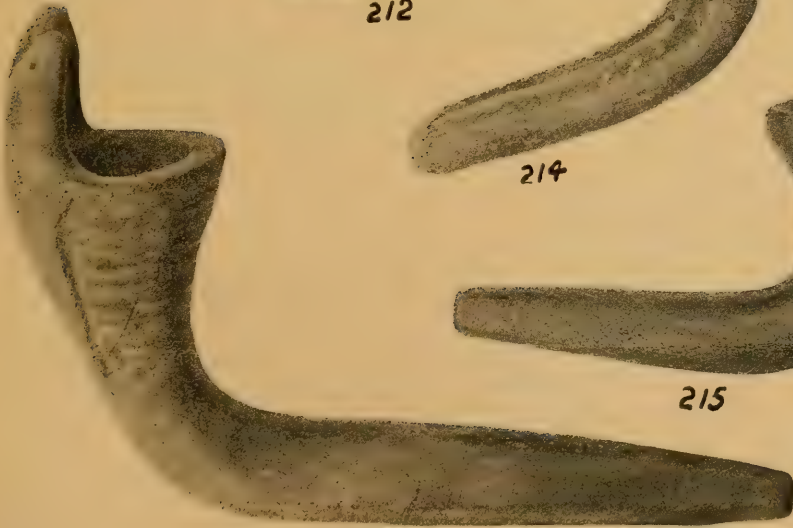
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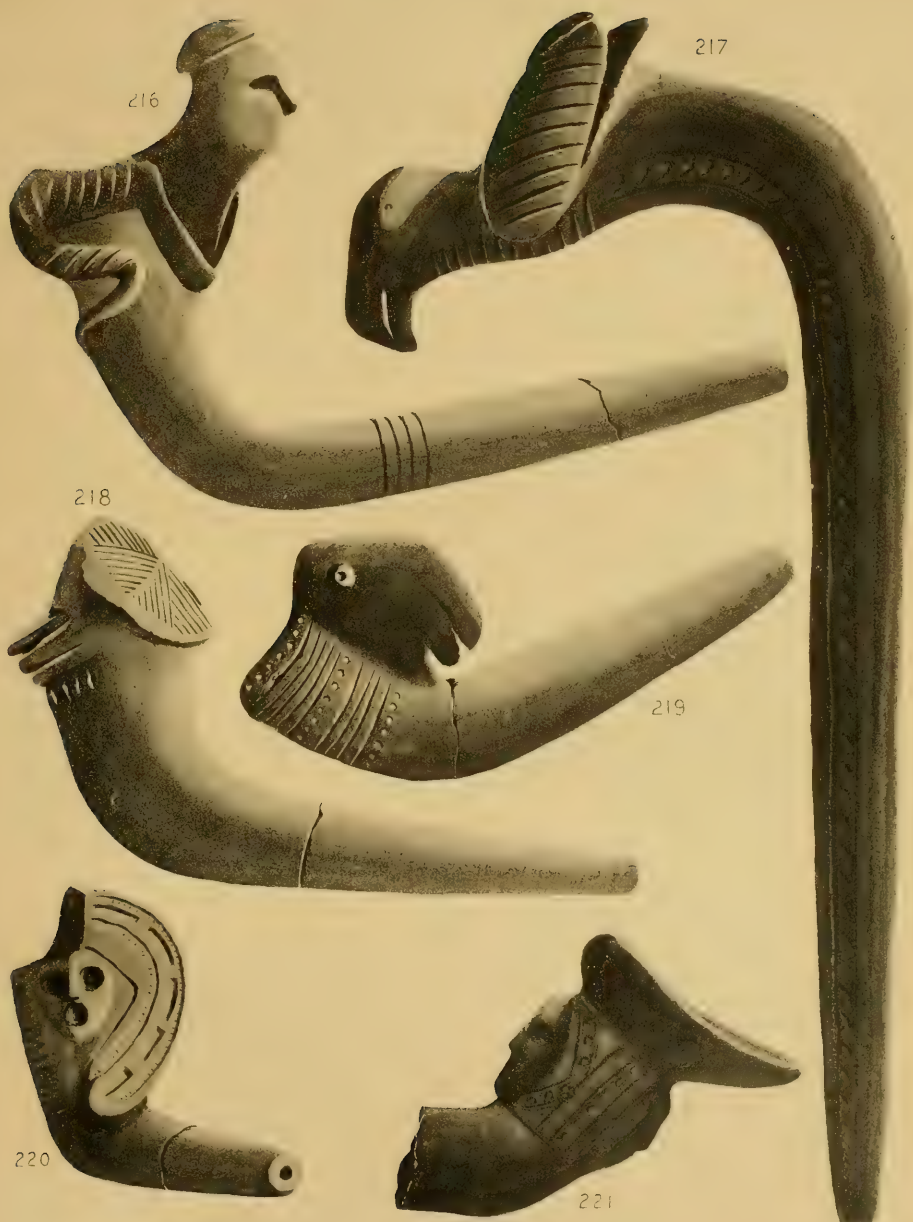


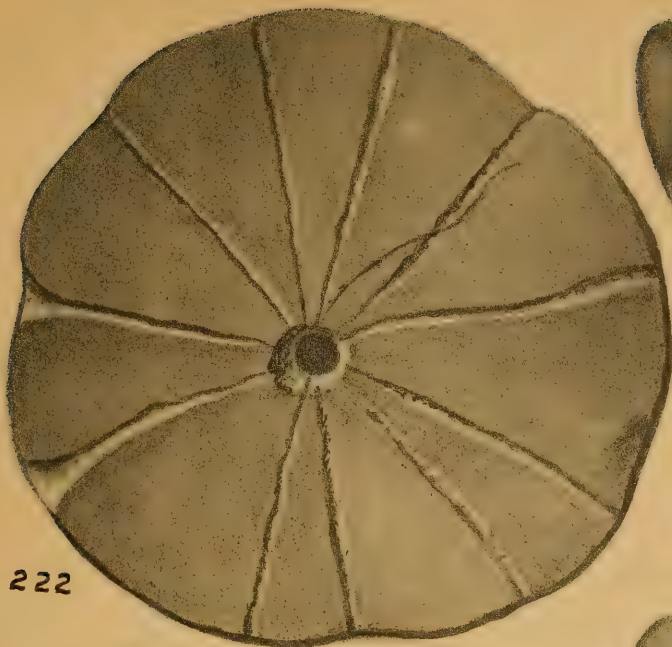
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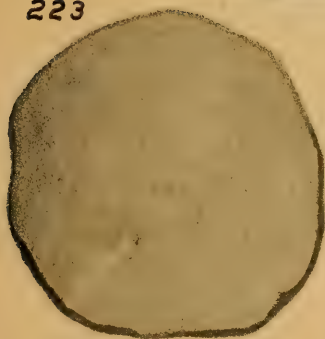


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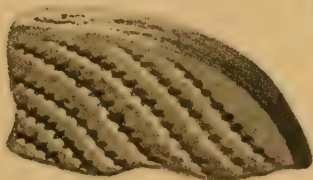
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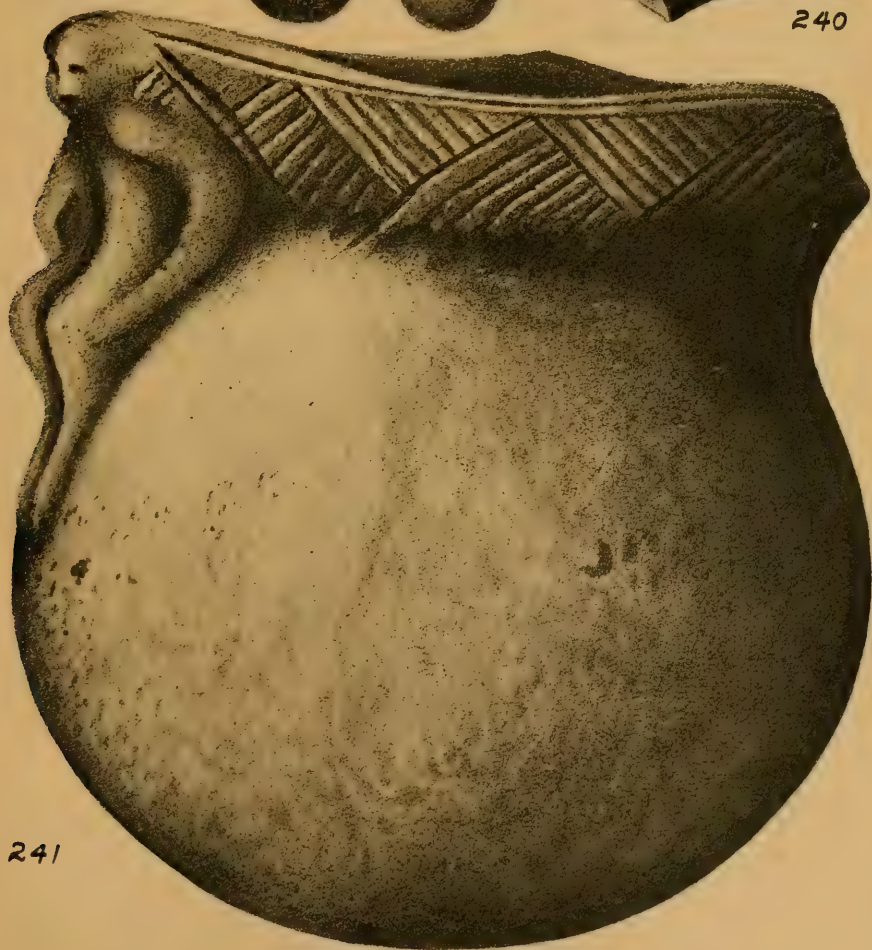
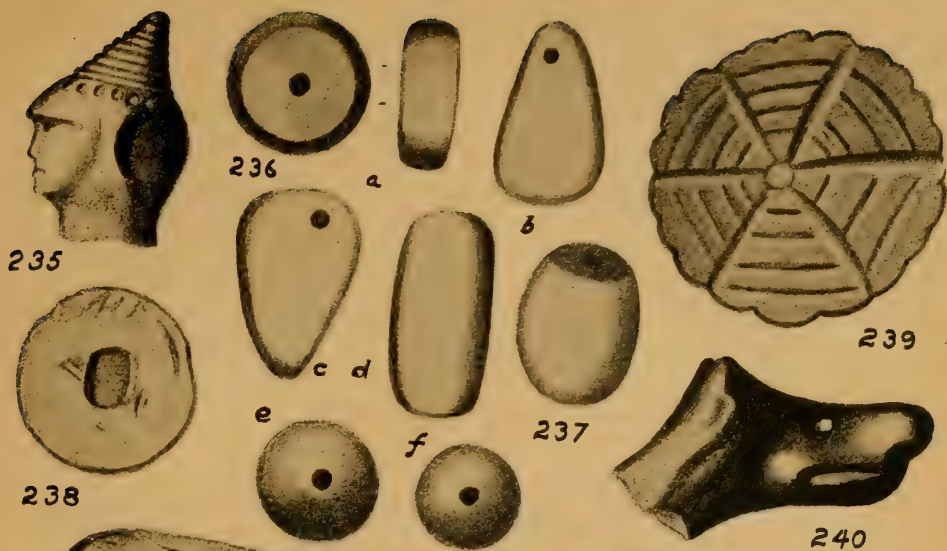
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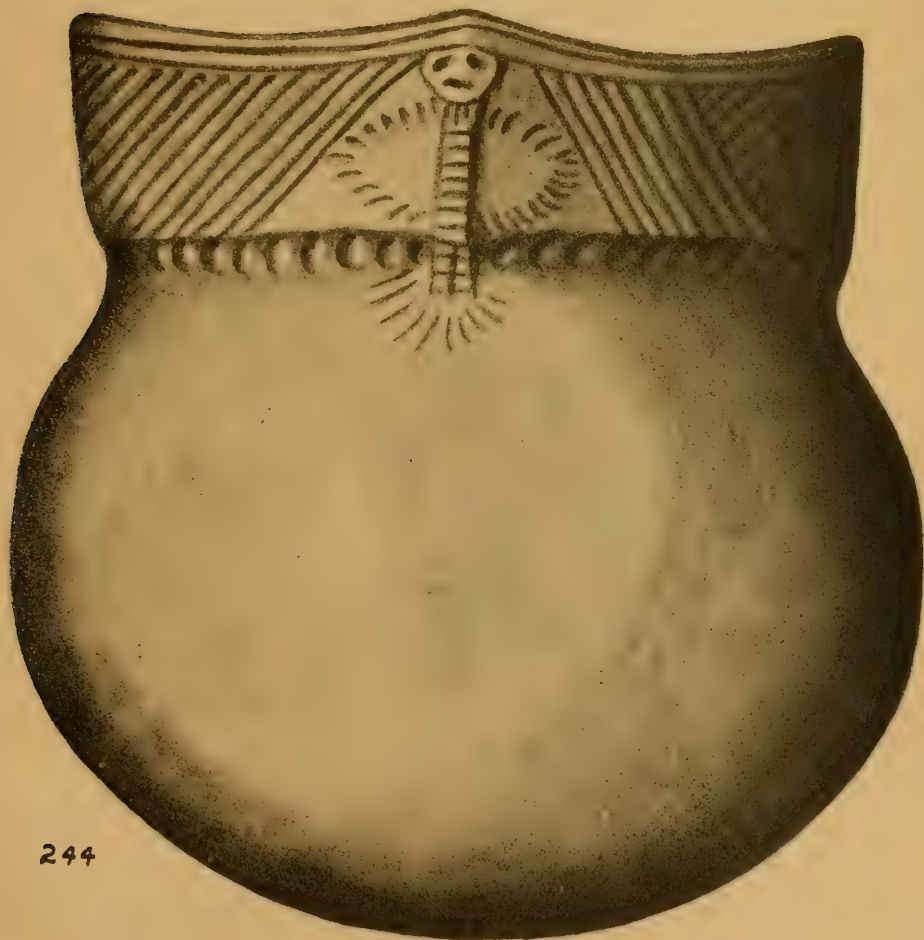




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